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IDAHO DEPARTMENT OF FISH AND GAME

NATIVE FISH ENHANCEMENT PROJECT ON THE POTLATCH CORPORATION OPERATING AREA IN NORTHERN IDAHO

2000 ANNUAL REPORT

IDAHO DEPARTMENT OF FISH AND GAME

REGIONAL FISHERIES MANAGEMENT INVESTIGATIONS

PROJECT I. North Fork Clearwater River Bull Trout Investigations

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IDFG 01-22

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JOB PERFORMANCE REPORT

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ABSTRACT

Clearwater Region personnel conducted fisheries surveys on 34 stream reaches as part of a cooperative watershed analysis with Potlatch Corporation. Multiple-pass electrofishing was conducted in seven different Land Management Units (LMUs) to generate population estimates for resident fish and amphibian species. Westslope cutthroat trout *Oncorhynchus clarki lewisi* were the most commonly sampled salmonid occurring in 31 of 34 (91%) stream reaches.

Suppression of brook trout *Salvelinus fontinalis* was conducted in the headwaters of the W. F. St. Maries River, and Keeler Creek. We sampled 64 transects, using a two-pass electrofishing removal methodology, for a total of 1,871 m of stream surveyed. Altogether, 600 westslope cutthroat trout and 346 brook trout were sampled.

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INTRODUCTION

The decline of westslope cutthroat trout *Oncorhynchus clarki lewisi* populations has been documented across much of its historical range. The westslope cutthroat trout is a species of special concern in Idaho and is a potential candidate for federal protection under the Endangered Species Act (ESA). The Idaho Department of Fish and Game (Department) has estimated that "strong " (greater than or equal to 50% of historical potential) populations remain in only 11% of the historical range in Idaho. Idaho biologists also estimate that only about 4% of the historical range supports strong populations that are not currently threatened by hybridization (Rieman and Apperson 1989). Many factors have been implicated for the overall decline of cutthroat trout including: habitat loss, fragmentation and degradation; overfishing; genetic introgression; and competition and predation by non-native species.

Anthropogenic habitat alterations are of primary concern, especially in areas with active land management practices. Although primary literature has documented life history and habitat requirements for westslope cutthroat trout, they are not completely defined, and different life-history characteristics (resident, fluvial, adfluvial) complicate these characterizations. To protect critical habitat for each life-stage, it is important to establish and implement more effective measures of habitat quality to improve recognition and documentation of habitat disruptions. It is crucial that biologists understand the different life-history strategies within their own management areas and to identify, protect, and restore critical habitat areas important for westslope cutthroat trout persistence. In Idaho, habitat loss was identified as the primary cause in the decline of westslope cutthroat trout in 87% of surveyed stream reaches that had depressed populations (Rieman and Apperson 1989).

Another major concern in the conservation and persistence of native salmonid populations is the influence of competition, predation, and genetic introgression with non-native salmonids. Many studies have shown that the introduction and invasion of non-native salmonids are at least partially responsible for the decline of many cutthroat species, especially in situations where habitat alterations were not implicated (Kruse, Hubert, and Rahel 2000). Genetic introgression is believed to be the most important cause in the decline of westslope cutthroat trout populations in Montana (Rieman and Apperson 1989). However, aside from genetic introgression, the interactions of westslope cutthroat trout with introduced brook trout *Salvelinus fontinalis* may prove equally important. It has been documented that cutthroat trout populations are less likely to coexist with brook trout than with other non-native salmonids (Griffith 1988). The negative impacts associated with introduced brook trout may exacerbate the problems of fragmentation and isolation of cutthroat trout populations. In the last decade, there has been an outpouring of scientific opinions and recommendations from across the western states for agencies to control exotic salmonids to help reestablish or protect large, genetically pure, allopatric populations of cutthroat trout.

Potlatch Corporation (PC) is currently undertaking the development of an Adaptive Management Agreement (with potential for a Candidate Conservation Agreement) with the United States Fish and Wildlife Service (USFWS) for westslope cutthroat trout. The purpose of the agreement is for PC to continue to implement conservation measures by encouraging development and protection of high quality habitat for westslope cutthroat trout on PC ownership in north central Idaho. These conservation measures include implementation of Best Management Practices for forest harvesting and road building, restoration actions addressing road, riparian, and stream conditions, as well as non-native fish suppression. The westslope cutthroat trout is widespread throughout Potlatch's Idaho ownership that is intensively managed for forestry, grazing, and agricultural production.

The Department's role is to be an active participant in an Adaptive Management Team, which may include members of the USFWS, Trout Unlimited, Environmental Defense Fund, PC hydrologists,

biologists, foresters, and other organizations. This team will be responsible for prioritizing watersheds and stream segments for coordination of habitat enhancement and non-native fish suppression. Within this team, the Department, with PC funding, has taken responsibility to conduct fish population surveys and implement non-native fish suppression for the watershed analysis in accordance with the agreement.

Aside from internal dealings with other agencies and organizations, the goal of a cooperative watershed analysis project between the Department and PC remains in place to help restore native fish populations in streams and drainages associated with PC lands in north central Idaho. The purpose of the Department's involvement is to be a cooperative partner in PC's watershed analysis and landscape planning with goals to:

1. Determine initial habitat conditions within each Land Management Unit (LMU);
2. Develop and prioritize restoration goals and activities for each LMU;
3. Develop Site-Specific Management Guidelines where needed;
4. Improve understanding of the distribution of westslope cutthroat trout and other species;
5. Monitor habitat conditions and distributions of focus species to determine the effectiveness of management guidelines.

Tentatively, the two factors most commonly associated with westslope cutthroat trout decline have been habitat alteration and presence of brook trout. The fishery management portion of PC's watershed analysis will assess a combination of habitat protection, habitat improvements, and suppression of brook trout in restoration efforts for westslope cutthroat trout within the Potlatch Corporation Operating Areas (PCOA).

Specific objectives for this fishery management project on the PCOA include:

1. Documentation of westslope cutthroat trout distribution, abundance, and community structure and their correlation with associated habitat relationships in PCOA landscapes.
2. Document response of westslope cutthroat trout to experimental habitat manipulations in PCOA landscapes with varied forestry treatments and disturbances.
3. Implementing and documenting the suppression of non-native brook trout and the subsequent response of the westslope cutthroat trout community in prioritized streams and landscapes within the PCOA.

STUDY AREA

This study is being conducted primarily within the boundaries of the PCOA, which encompasses approximately 850,000 hectares in the panhandle of north-central Idaho (Figure 1). PC ownership within the PCOA is approximately 271,000 hectares, approximately 32% of the land area. The PCOA is bordered on the west by the Palouse agricultural area (approximately Moscow, ID) and to the east by the Clearwater National Forest. The St. Joe River is the approximate northern boundary, and the Clearwater River is the approximate southern boundary. The operating area includes Potlatch lands that are intermingled with lands owned by the U.S. Forest Service (~15 %), U. S. Bureau of Land Management (BLM) (~2%), State of Idaho (~18%) and other small public and private holdings (~34%).

The PCOA in north-central Idaho is divided into 87 LMUs that range in size from approximately 2,000 to 20,000 hectares. The LMUs usually define a naturally occurring watershed with borders defined on the basis of topography and drainage. The elevation on the PCOA ranges from 310 to 1,850 m above sea level, with the majority of the operating area occurring between 925 to 1,230 m. The average annual precipitation ranges from 63.5 cm and increases to about 190.5 cm at the higher

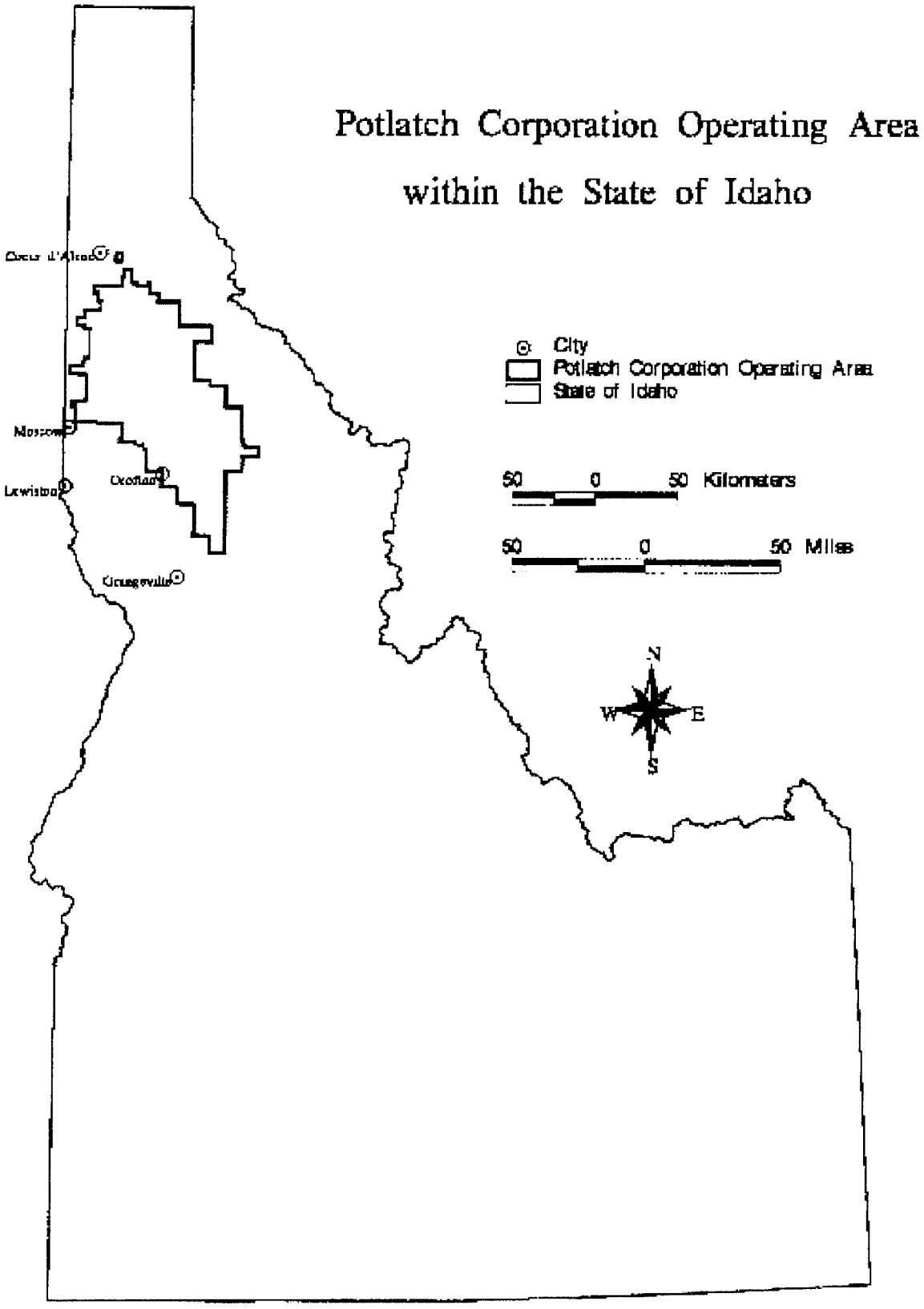


Figure 1. Potlatch Corporation Operating Area (PCOA) map of study area.

elevations. The PCOA is dominated by mixed coniferous forests of Grand Fir *Abies grandis*, Douglas Fir *Pseudotsuga menziesii*, Western Larch *Larix occidentalis*, Western Red Cedar *Thuja plicata*, Ponderosa Pine *Pinus ponderosa*, White Pine *Pinus monticola*, Engelman Spruce *Picea engelmannii*, Western Hemlock *Tsuga heterophylla*, and Subalpine Fir *Abies lasiocarpa*. The PCOA is located west of the extensive Idaho Batholith and the geology of the area is more varied in its parent material.

All LMUs with a significant proportion of PC ownership have been sampled for at least the presence or absence of salmonid species. Westslope cutthroat trout have been found in 28 of the 87 landscapes, with 23 landscapes showing evidence of reproducing populations (multiple age-classes within population). Within these 28 landscapes that contain westslope cutthroat trout, brook trout are present in 14 with reproduction documented in 13 LMUs. Also, 16 of the 28 landscapes contain populations of rainbow trout *O. mykiss* with reproduction in 14 of these landscapes. There are no documented spawning or early-rearing areas for bull trout *Salvelinus confluentus* on Potlatch ownership. A few adult bull trout have been reported in drainages associated with PC ownership but they are very rare, and subsequent surveys by PC contractors have not documented any bull trout life stages.

The only salmonid species currently listed as threatened or endangered on PC ownership is steelhead trout *O. mykiss*. In 1997, the National Marine Fisheries Service (NMFS) listed steelhead trout in the Clearwater River drainage as threatened. Historically, steelhead trout were found throughout the entire Clearwater River drainage, but since the construction of Dworshak Dam in 1971, the North Fork Clearwater River populations have been extirpated. Currently, steelhead trout occupy extensive portions of the Potlatch River system and other smaller tributaries of the lower mainstem Clearwater River. Spring/summer chinook salmon *O. tshawytscha*, although historically found in the PCOA, are not listed as threatened or endangered in the Clearwater River drainage, and fall chinook salmon are currently found only in the mainstem Clearwater River that borders the southern LMUs of the PCOA.

Streams throughout the PCOA provide habitat for other riparian and aquatic species including: shorthead sculpin *Cottus confusus*, torrent sculpin *C. rhotheus*, Piute sculpin *C. beldingi,* mountain whitefish *Prosopium williamsoni*, speckled dace *Rhinichthys osculus*, longnose dace *R. cataractae*, red-sided shiner *Richardsonius balteatus,* Idaho giant salamander *Dicamptodon aterrimus*, tailed frog *Ascaphus truei*, long-toed salamander *Ambystoma macrodactylum*, Columbia spotted frog, *Rana luteiventris*, and western toad *Bufo boreas*.

During the summer of 2000, we surveyed fish populations as part of watershed analysis in 7 PC LMUs which included Landscapes 15, 23, 30, 31, 32, 57, and 67 (Figure 2). The following 34 stream transects were surveyed:

LMU #15	Engstrom Creek	**LMU #32**	M. F. St. Maries River
Mica Creek	E. F. Mica Creek	**MF St. Maries River**	M. F. St. Maries River
	Tributary of Mica Creek		Upper Trib. of St. Maries River
			White Rock Creek
			Flewsie Creek
LMU #23	Canyon Creek		
Thorn Creek	Thorn Creek		
	S. F. Thorn Creek	**LMU #57**	Three Bear Creek
	Tributary to Thorn Creek	**Long Meadow Creek**	Chambers Creek
	Jaycott Creek		Long Meadow Creek
			Oviatt Creek
			McGary Creek

LMU #30	Olsen Creek	**LMU #67**	Bertha Creek
Blair Creek	Childs Creek	**#67 Upper Beaver Cr**	Bingo Creek
	Blair Creek		S. F. Beaver Creek
	Merry Creek		E. F. Beaver Creek
	Corbett Creek		Harlan Creek
	Mann Creek		
LMU #31	Keeler Creek		
WF St. Maries	W. F. St. Maries River		
River			
	Cat Spur Creek		
	Cat Spur Creek		
	Kitten Creek		

During the summer and fall of 2000, brook trout suppression was conducted in LMU #31 on portions of the W. F. St. Maries River and Keeler Creek.

METHODS

Watershed Analysis

The adaptive management team has prioritized all LMUs for watershed analysis where westslope cutthroat trout have been known to exist. Every landscape unit where cutthroat trout have been found was evaluated for strength of the cutthroat population as well as threats from competition (brook and rainbow trout) and hybridization (rainbow trout). The population strength of westslope cutthroat trout was determined from density estimates (1-pass electrofishing data): with low densities = 0 to 4/100 m^2, medium densities = 4 to 8/100 m^2, and high densities = >8/100 m^2. High priority is assigned to reproducing cutthroat populations (multiple age-classes) with high densities that have little interaction with brook and rainbow trout. Medium priority is assigned to populations that have medium range densities and some interactions with brook and rainbow trout. Low priority is assigned to populations that have substantial interactions with brook and rainbow trout, or with low densities of cutthroat trout, and no evidence of reproduction.

Watershed analysis and landscape planning are the primary tools used to understand the condition and function of a particular watershed. Prioritized watershed analysis sites (stream transects given a specific HydroSite ID Number) surveyed in 2000 included LMUs 15, 23, 30, 31, 32, 57 and 67 (Figures 3-9). Of these, high priority landscapes surveyed included LMUs 23, 30, 31, 32, 57 and 67, with one medium priority, LMU 15. For PC, the watershed analysis will identify threats from legacy conditions and determine associated restoration opportunities. The effect of legacy conditions will be primarily correlated with stream habitat characteristics, riparian habitat variables, and road condition and density. Secondly, the watershed analysis will identify site-specific management guidelines required to protect against impacts from further management actions and activities.

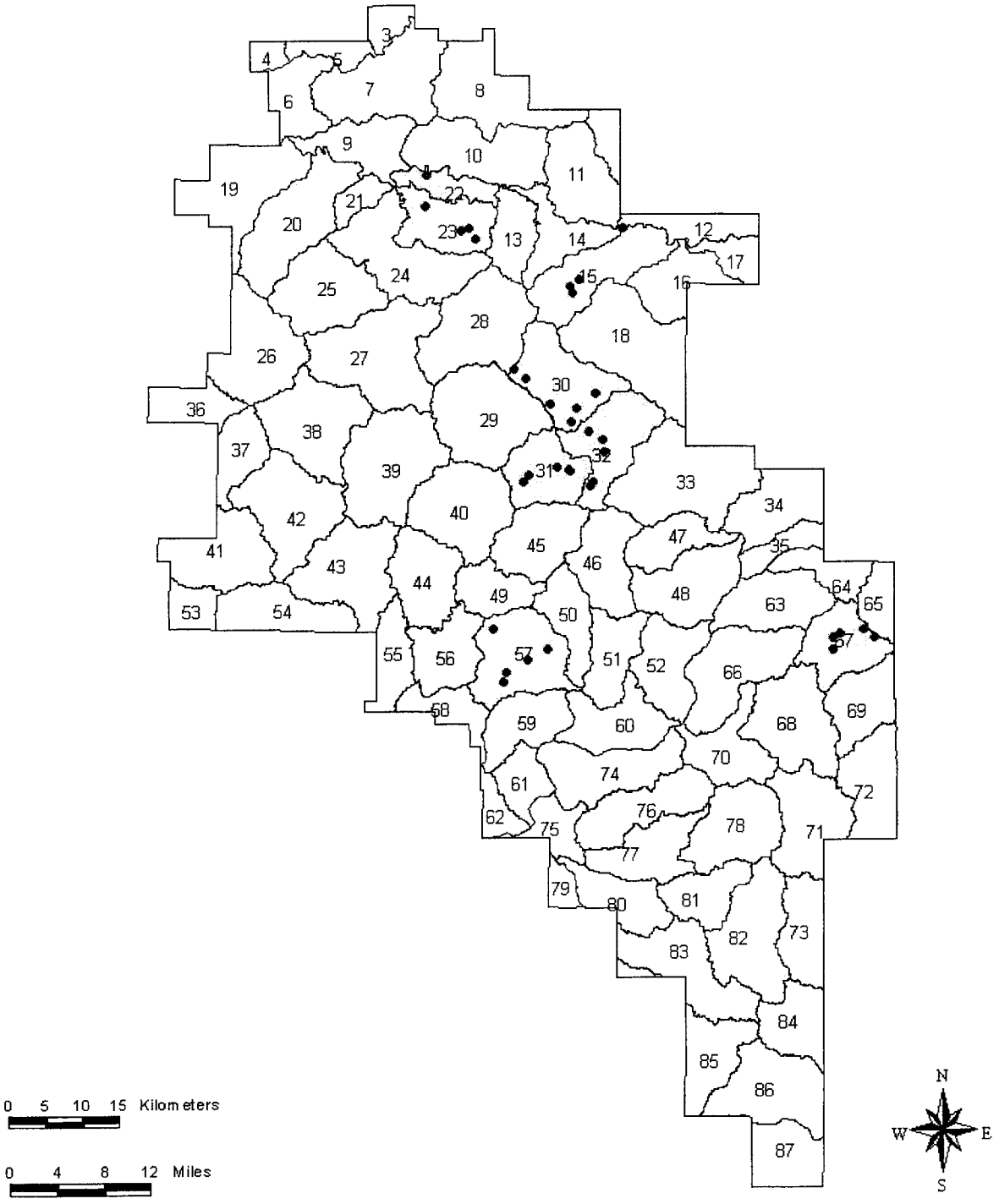


Figure 2. Land Management Units (LMU) surveyed for Watershed Analysis in 2000 (dots = HydroSite #).

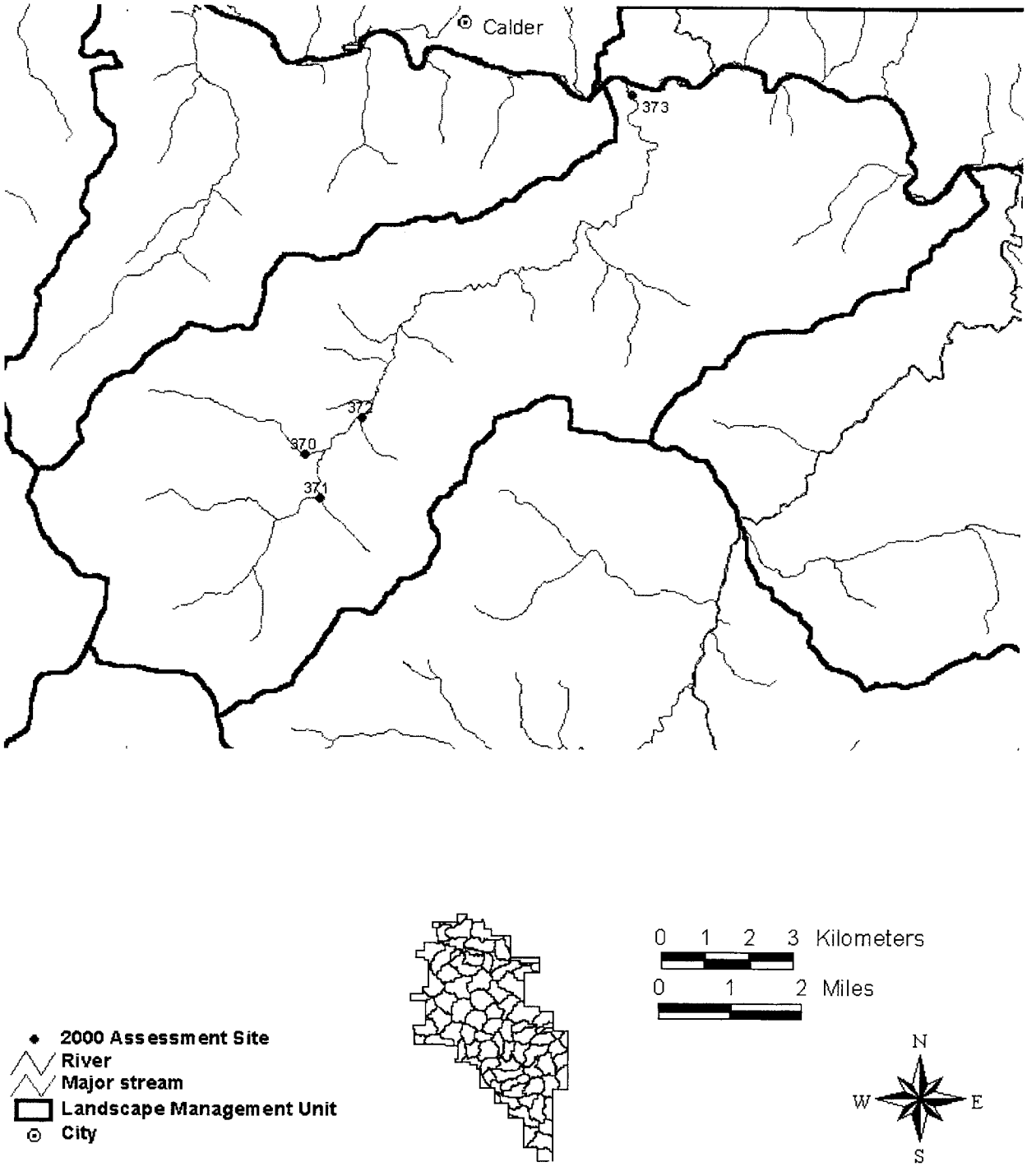


Figure 3. Landscape Management Unit 15 – Mica Creek (dot = HydroSite #).

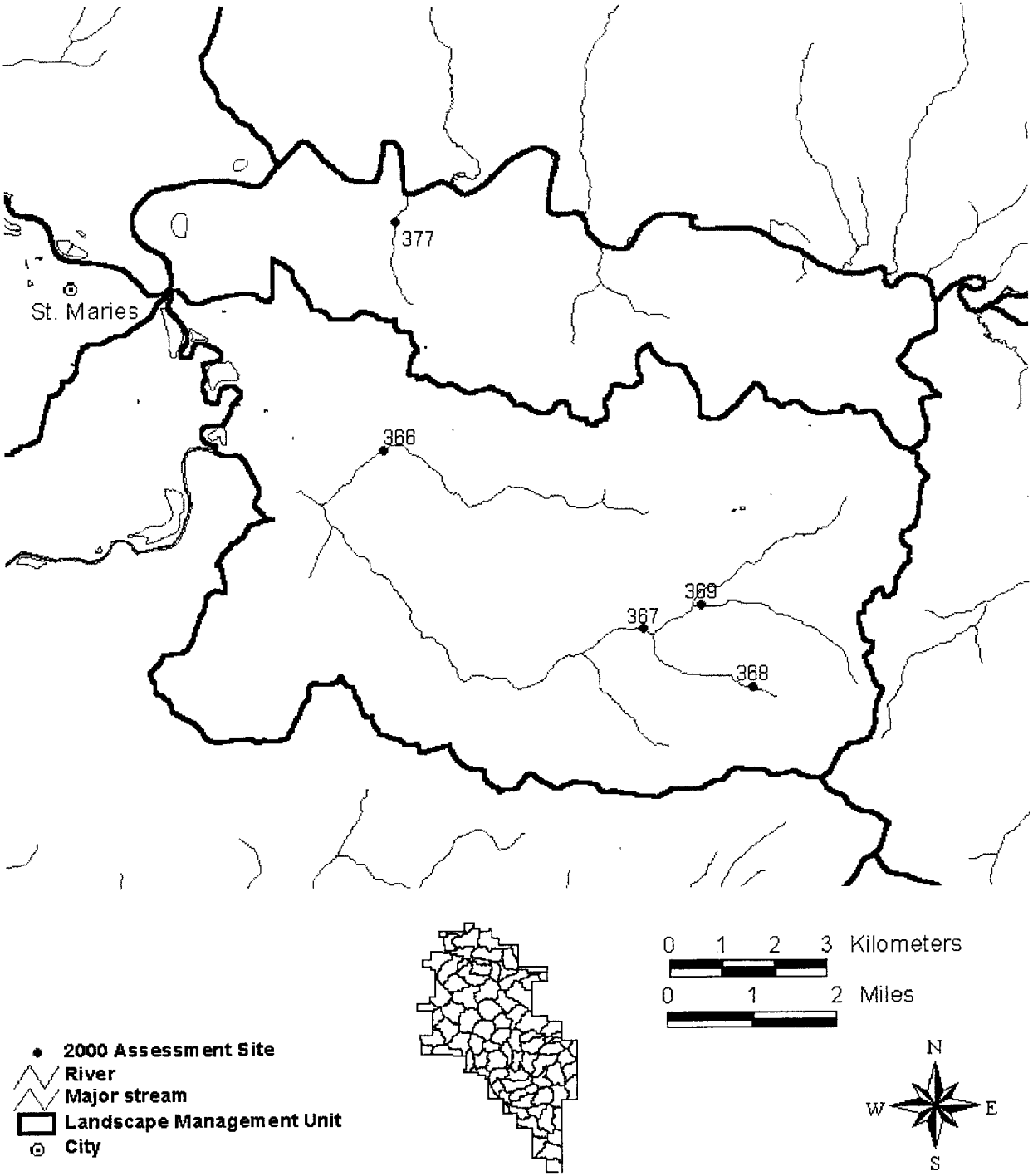


Figure 4. Landscape Management Unit 23 – Thorn Creek (dot = HydroSite #).

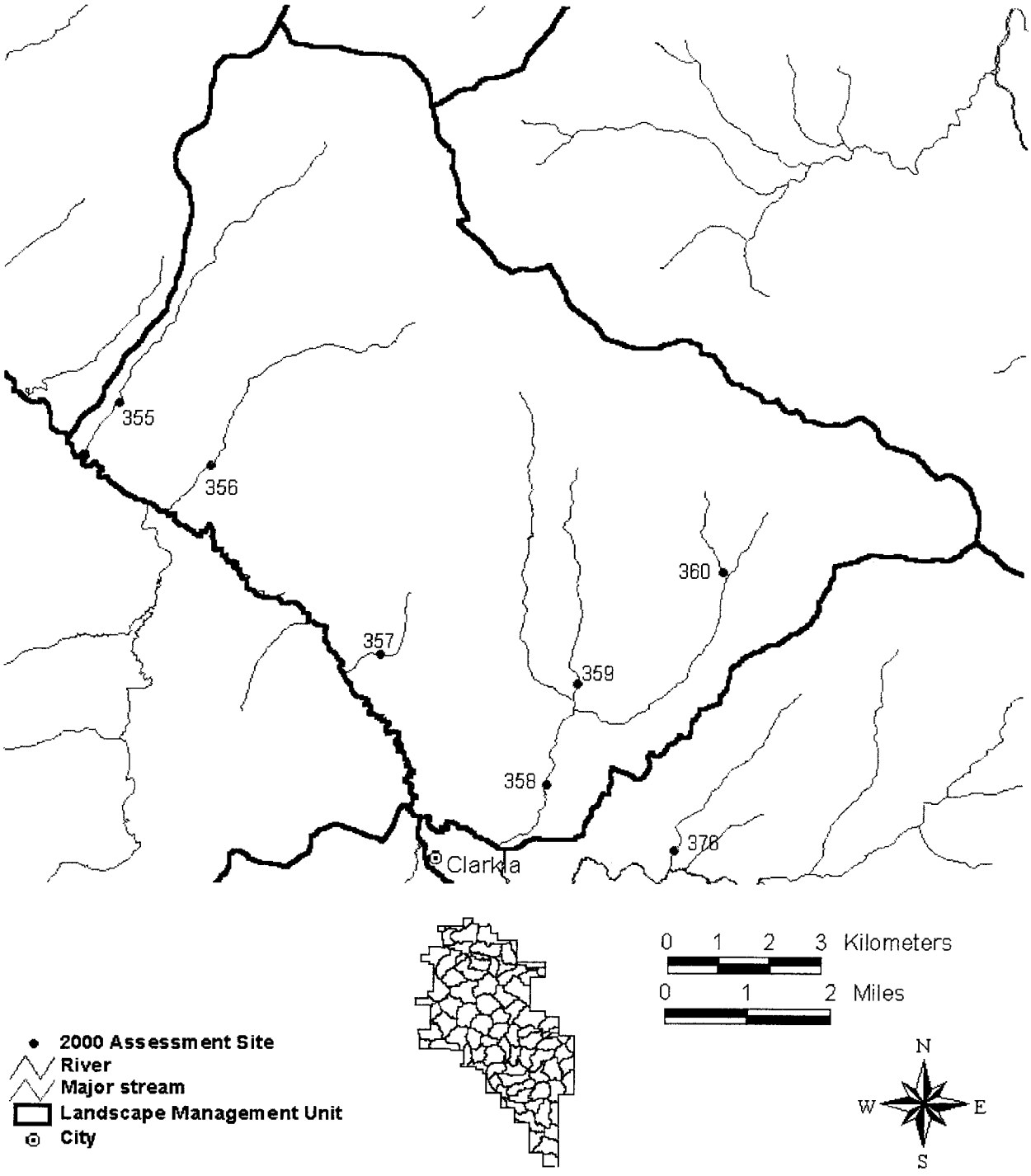


Figure 5. Land Management Unit 30 – Blair Creek (dot = HydroSite #).

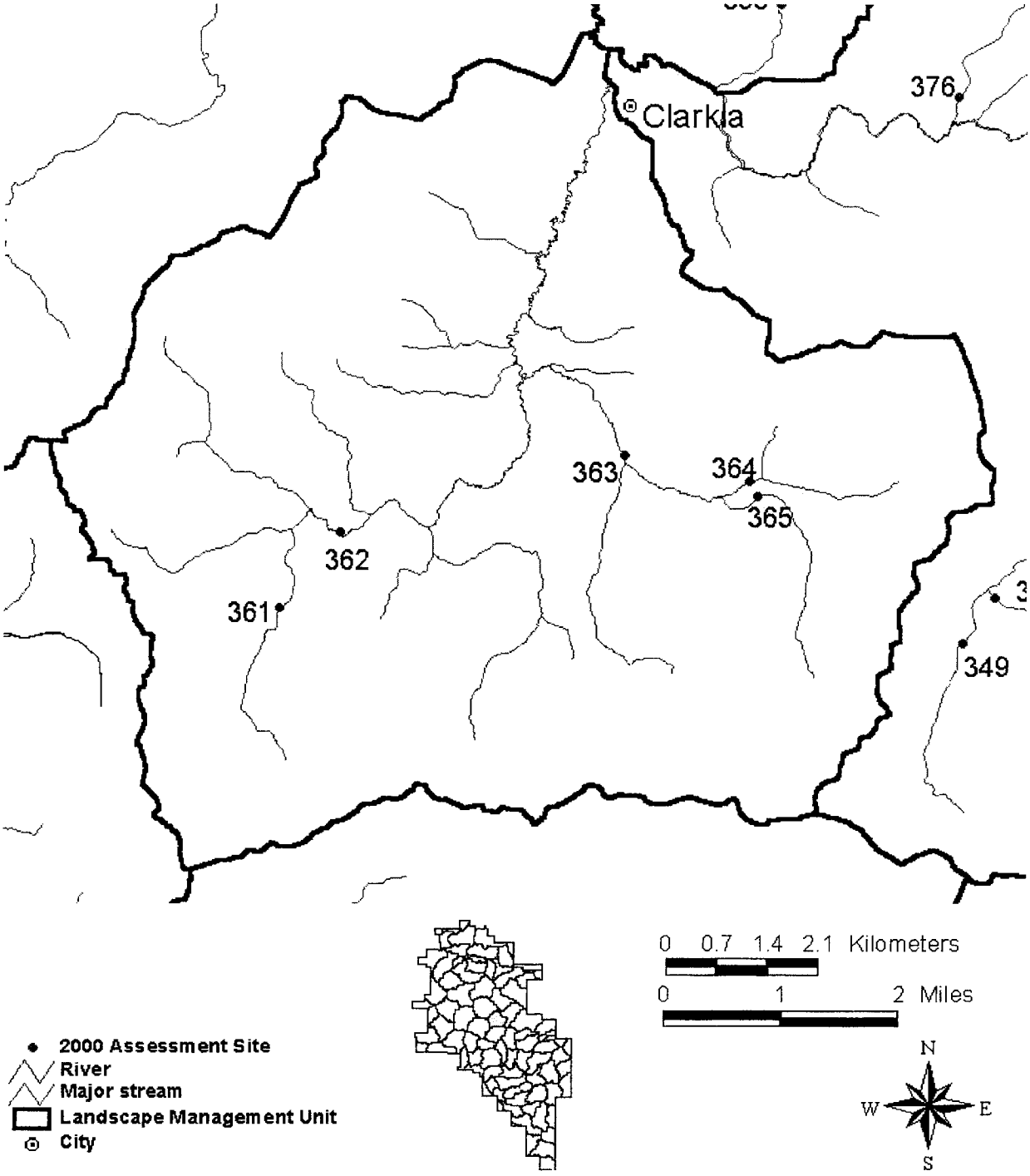


Figure 6. Land Management Unit 31 – W. F. St. Maries River (dot = HydroSite #).

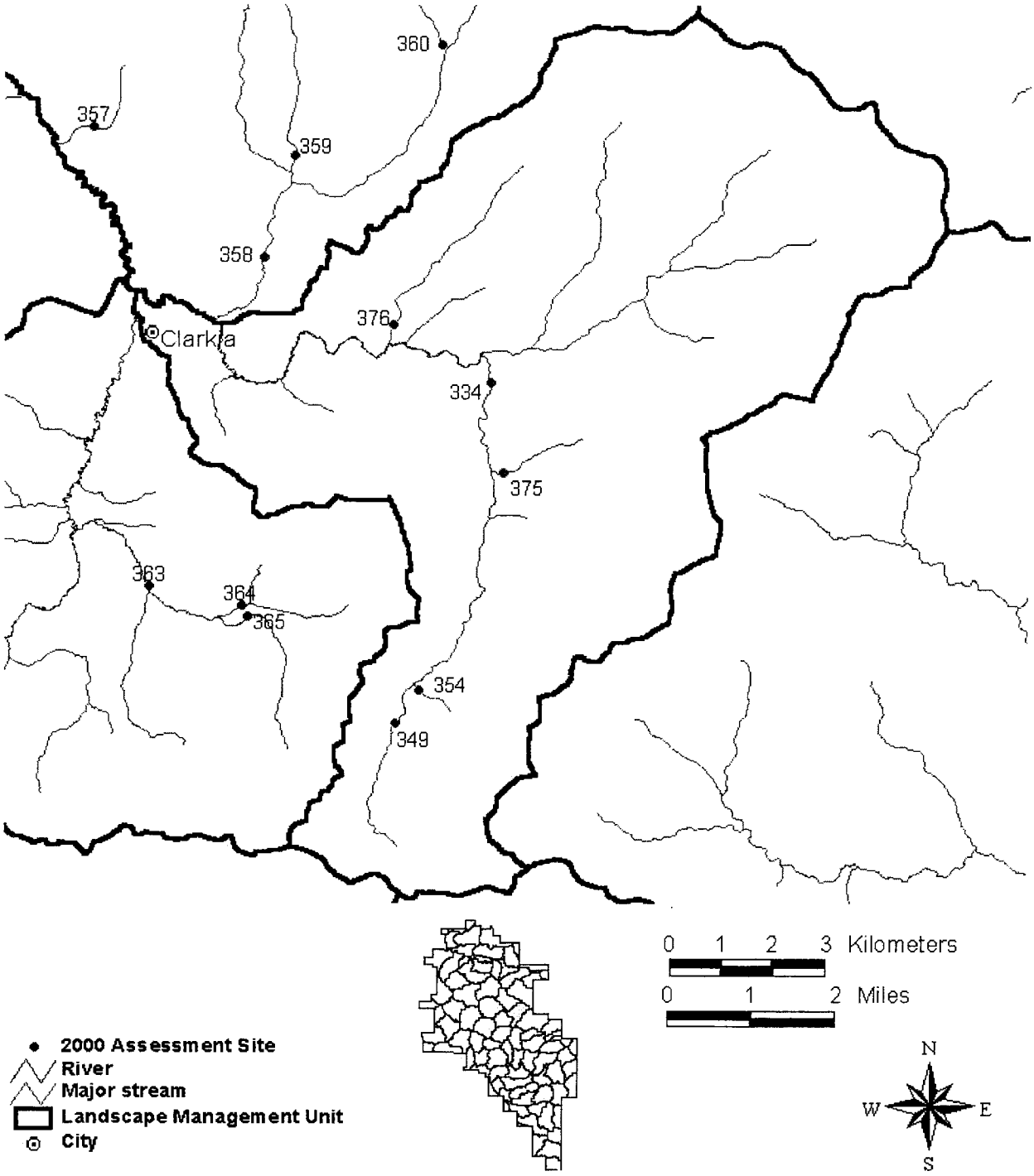


Figure 7. Land Management Unit 32 – M. F. St. Maries River (dot = HydroSite #).

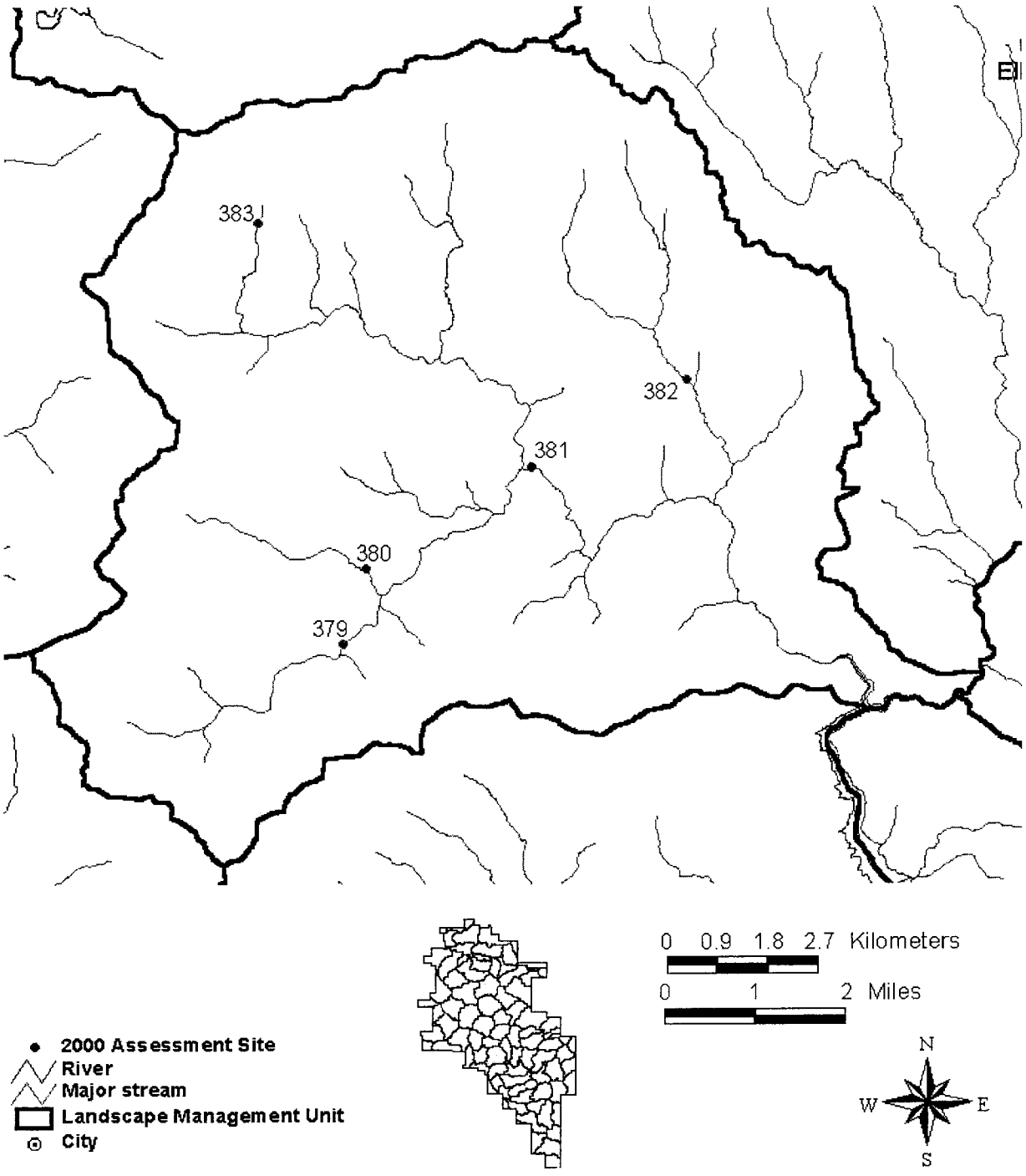


Figure 8. Land Management Unit 57 – Long Meadow Creek (dot = HydroSite #).

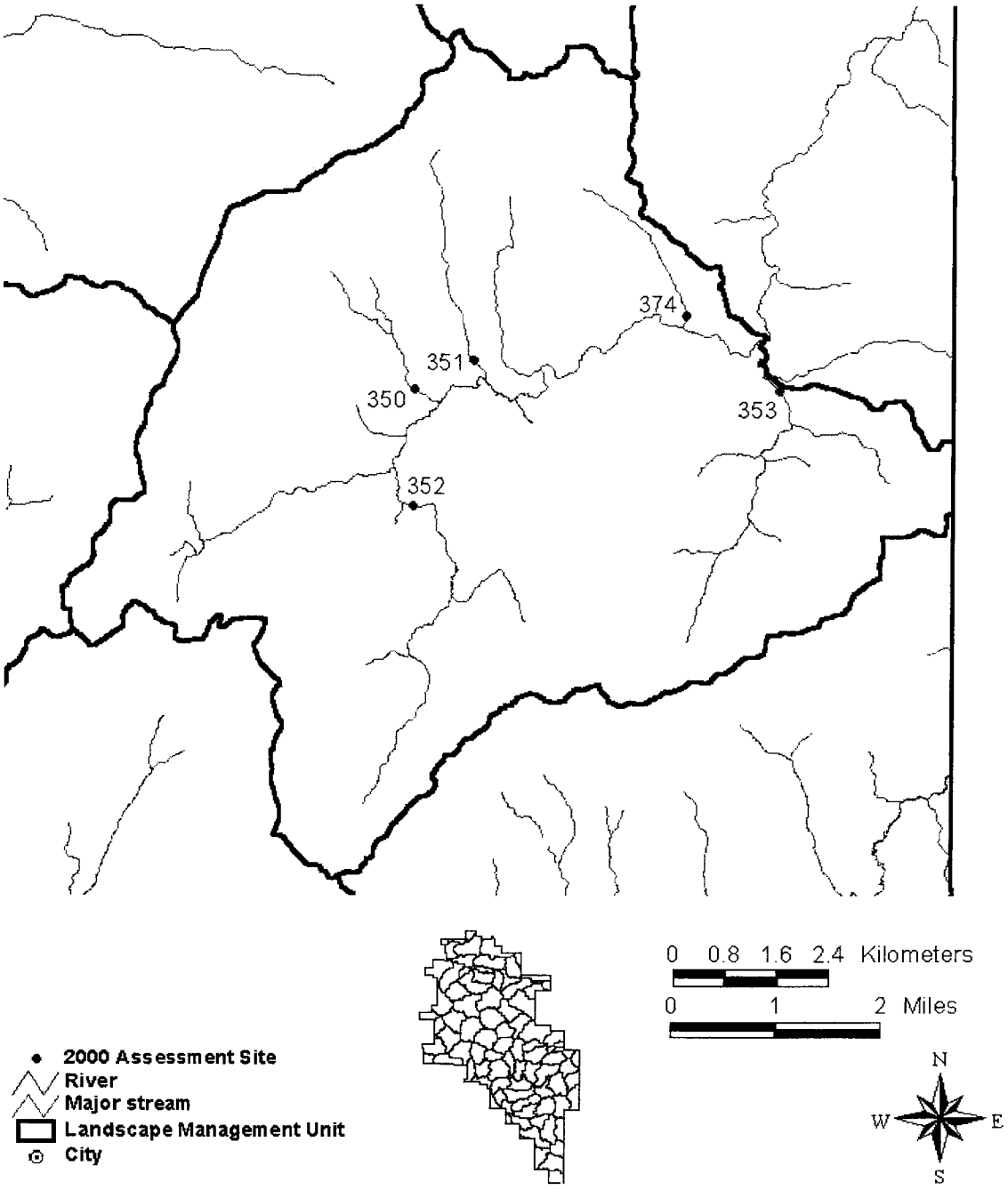


Figure 9. Land Management Unit 67 – Upper Beaver Creek (dot = HydroSite #).

Prioritized watershed analysis sites were selected by identifying five stream reaches in each LMU that provided representative samples from any major drainages with a high percentage of PC ownership. These reaches were chosen with three primary factors in mind: 1) stream reaches were within an prioritized westslope cutthroat trout drainage (LMU); 2) the stream reaches within an LMU were distributed to reflect both headwater and cumulative downstream conditions; 3) all stream reaches were located on PC ownership. In 2000, the watershed analysis sites were not randomly chosen but selected with PC ownership and road access in mind. The advantage of this approach was increasing sample size while decreasing access time and also making identification of sites easier because of separate habitat and fisheries crews. The disadvantage was a potential bias toward more heavily roaded habitats, which may affect species occurrence or abundance. However, legacy conditions across each LMU have differences in both the spatial and temporal amounts of habitat alterations, which may be crucial for analysis in determining effects on species distribution and abundance.

Stream Surveys

Pine Orchard, Inc. a private contractor for PC conducted stream surveys. Pine Orchards conducted the collection of physical habitat measurements and water temperature monitoring in association with the Department sampling all sites for fish species composition and abundance. The habitat and fish sampling of the sites occurred from late June through early August 2000. Water temperature monitoring occurred from June to October using data recorders. Stream survey methodologies were based on the foundation of the protocol established by the Idaho Division of Environmental Quality (IDEQ), Beneficial Use Reconnaissance Project (IDEQ 1995), although modifications to data collection procedures and attributes were initialized.

In June, a Pine Orchard habitat survey crew used a set of working field maps to monument the stream transects and place water temperature recorders. At each site, the observers verified that the selected site was accessible and representative of the general conditions of the selected stream reach. Observers then chose a convenient starting point, which was to be at or near a barricade or break where a block net could be placed for electrofishing. Starting points at habitat breaks were preferred. The beginning of the reach was monumented with rebar stakes on both sides of the stream. A metal tag with the stream site number was attached to one of the rebars. Flagging also marked the beginning of the transect. Depending on terrain, a latitude/longitude location was recorded using a Trimble GPS unit. At a location approximately 5 to 15 meters downstream from the start of the sample transect, a temperature data recorder was placed in the stream. The location required the following conditions to place the data recorder correctly: 1) there was good water mixing, 2) it was hidden from fishermen or other passersby, 3) it was shielded from direct sunlight, and 4) it was tied with a safety string to a rock, log, or root. After placement of the data recorder, the observers walked upstream with a hip chain to measure distance, and then reviewed the general characteristics of the transect. An estimate was made of the (average) wetted channel width of the stream. The gradient of the reach was measured with a clinometer at both the start and end of the reach. Once the observers reached a distance that was the greater of 20 times the wetted channel width or 100 meters long, the end of the sample reach was marked with rebar and flagging.

Working in close association with one another, the crews from Pine Orchard and the Department timed their habitat sampling and electrofishing sampling at a given stream transect to coincide within two weeks of each other. This minimized the difference in fish population estimates with falling water levels as the summer progressed or any other conditions that may have affected changes in site observations between the two crews. However, visits to each site by each crew were kept at least several days apart in order to increase working efficiency and minimize the disturbance of physical habitat assessment on fish sampling results.

The Pine Orchard habitat survey team, consisting of two technicians, sampled all 34 streams in 2000. The two-person survey team conducting the 2000 surveys included two college students pursuing degrees with scientific backgrounds. The team leader has experience since 1989 in various habitat classification surveys, electrofishing surveys, and water temperature monitoring on PC ownership.

When the habitat survey crew returned to a site previously monumented, they began moving upstream with a hip chain and stadia rod. One observer proceeded upstream while the other observer recorded data. Photographs were taken at the start of the transect and then progressively every 30 feet or one-tenth of the transect upstream. If the transect was 500 feet long, for example, photographs were taken every 50 feet. This procedure created a slideshow of at least 10 photographs of the stream reach. Using the recorded GPS data, aerial photos, and detailed topographic maps, the observers ascertained the precise starting location of each stream transect which was later entered into a GIS database.

Starting with zero as the downstream end of the transect, the observers recorded all breaks between habitat types. Habitats were broken into pools (slow water) and non-pools (fast water). For each habitat unit, the length, average wetted width, and average wetted depth were recorded. Additional data was recorded at pools in an attempt to describe pool quality. Pool tail-out depth and maximum depth were recorded in order to calculate residual depth. Pool cross-sections were not always taken at the deepest part of the pool. The pool cross-sections were located such that the observers could measure safely and accurately. In larger streams, this often resulted in location of the pool cross-section closer to the tail-out. Rebar stakes were installed at locations of pool (slow water) and non-pool (riffle) cross-sections. The cross-section rebar stakes were painted, and an identifier tag was attached to one stake. The stakes were flagged and a compass bearing was recorded from one stake to the other. When there was a shortage of adequate pools or non-pools, the predominant habitat type was used for any additional cross-sections. A total of six cross-sections were completed at each stream site in 2000. The locations of each cross-section were recorded. The habitat unit survey ended when the observers reached the upstream monumentation (rebar and flagging). The habitat unit survey ended at the same point of the transect as the fishery survey.

For substrate measurements, Wolman pebble counts of fifty particles each were measured. Although not always possible due to stream characteristics, most non-pool cross-sections were recorded at riffles. These Wolman transects ran from the scoured bottom of one stream edge to the scoured bottom of the other side of the stream. Intermediate particle diameters were recorded for each of the 50 particles.

After the habitat unit classification, the observers moved to the channel cross-section locations where rebar stakes had been previously deposited. The rebar stakes were driven into the ground above normal bankfull water levels. A tape was tightly strung between the stakes across the stream as level as possible. Using a stadia rod, the height from the streambed to the tape was recorded. In addition to capturing the rebar measurements, bankfull measurements, and wetted edge measurements, the stream itself was profiled with the following criteria: wetted width 0-10 feet, every 0.5 feet; wetted width 10-20 feet, every 1 foot; wetted width greater than 20 feet, every 2 feet. This resulted in a minimum of 10 points along the cross-section in the stream, excluding the bankfull and wetted edge on each side of the stream. Water depths were recorded where applicable. The observers also were allowed to add points at their discretion in order to help better characterize the true profile of the cross-section. Also, as a riparian index, four canopy density measurements were taken at each of the 6 cross-sections using a densimeter. Measurements were taken facing each bank, one foot from the wetted edge, and at the middle of the stream facing upstream and facing downstream.

To evaluate habitat quality and help drive the adaptive management process, PC proposes monitoring and being held accountable for stream temperature, fine sediment in riffles, and percent pool

habitat. The goal is to move all streams into optimal ranges of these variables to restore high quality habitat for westslope cutthroat trout.

Fisheries Surveys

For documenting species occurrence, and abundance in selected stream transects, IDFG conducted three-pass depletion-removal electrofishing techniques to sample fish and amphibian populations. Electrofishing was conducted with a 3 to 4 person team, with one person operating a Smith-Root Model 15D generator powered backpack electrofishing unit. The other team members netted fish, with one or two primary netters and one secondary netter who carried the 5-gallon holding bucket. We typically operated the electrofishing unit at the I-5 setting at 400-600 volts pulsed DC with the conductivity of most streams ranging from 10-70 microsiemens.

After the completion of each electrofishing pass, all salmonids were measured for fork-length (mm) and weight (g), while all other fish species were sub-sampled with 20 individuals measured for fork-length and weight. All amphibians were also collected, identified to life-stage, and counted. Before handling, all fish were anesthetized with small amounts of MS-222. In between passes, fish and amphibians were held in recovery live-wells, and released back into the transect after completion of all 3 passes processing.

For all completed streams surveys, we met the assumptions of depletion-removal electrofishing by (1) placing block nets (0.5 cm mesh) at both ends of a stream transect (closing the population), (2) sampling each transect within the same day (usually 3 hours), and (3) using constant effort in each pass.

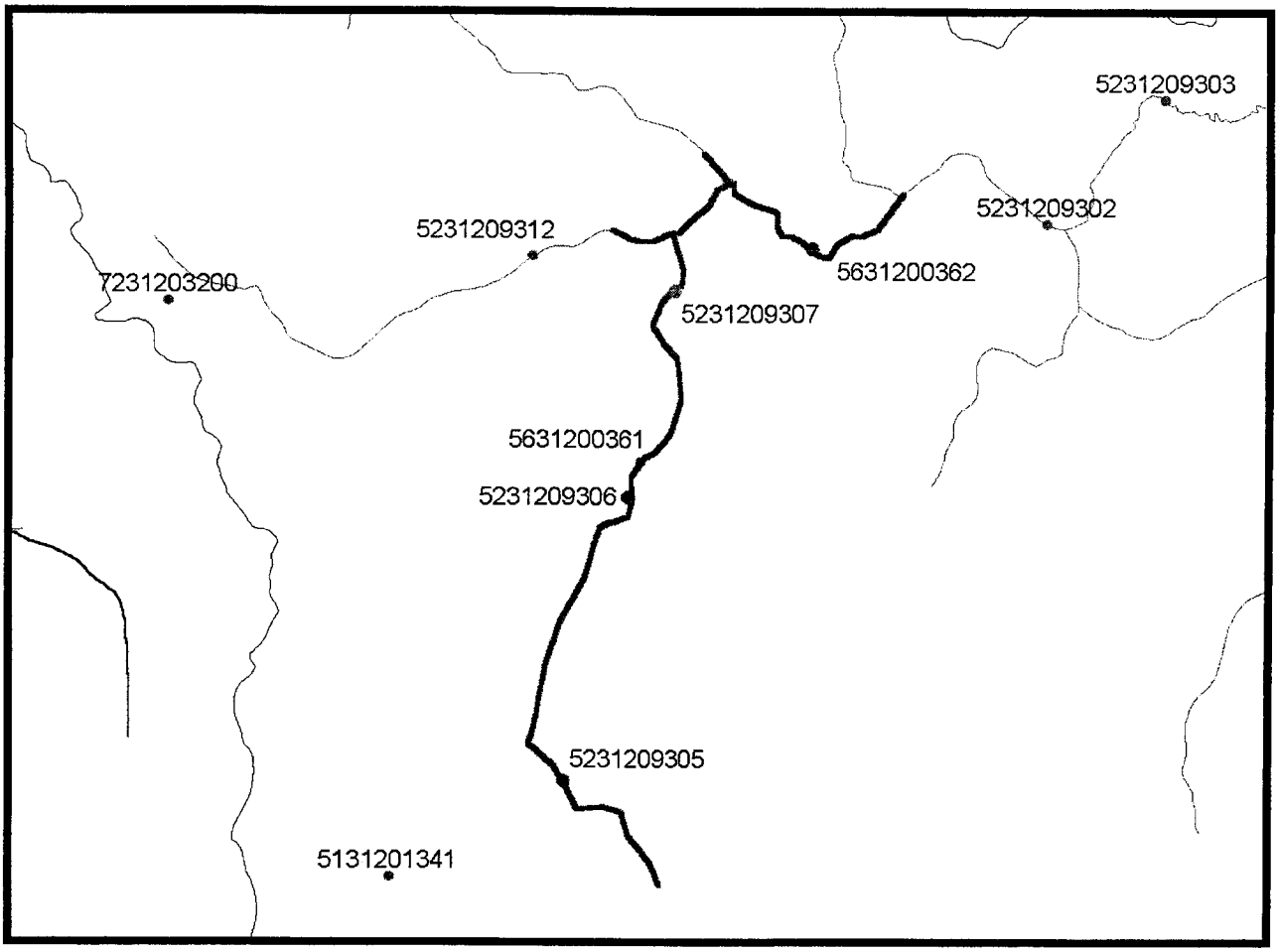
Population estimates for each stream transect were generated using a program developed by Steve Duke (1994). This program uses methods from Carle and Strub (1978) and Zippin (1956). This program generates total population estimates, probability of capture, standard error of total population, and 95% confidence intervals for total population.

Brook Trout Suppression

We conducted brook trout suppression in the headwaters of the W. F. St. Maries River in LMU 31. Electrofishing was conducted in both the W. F. St. Maries River and in Keeler Creek (Figure 10). Keeler Creek was identified as a potential suppression site because of the sporadic distribution of brook trout documented in earlier fisheries surveys. We conducted brook trout removals in approximately 1.5 km of the W. F. St. Maries River downstream of the confluence with Keeler Creek, and approximately the first 4.5 km of Keeler Creek. Suppression was conducted on PC ownership and USFS lands.

We used a different two-pass electrofishing methodology per stream transect in the suppression sites, with a one-pass effort scheduled for the subsequent year (Thompson and Rahel 1996). This technique has been observed to essentially eliminate recruitment within the first year and hopefully remove young-of-year fish and any others missed the first year. They also found this methodology minimizes man-hour time per transect and noted little difference between conducting second and third passes if subsequent year removals are involved.

Electrofishing stream transects were primarily 100 m long, except in certain transects where non-fishable barriers, such as road culverts were encountered. We continued electrofishing upstream in Keeler Creek until we electrofished 1 km with no brook trout present. Methodologies for sampling all fish and amphibian species, transect set-up, and data processing were the same as those described in the watershed analysis sites.



Potlatch WA - Streams	Landscape Unit	HydroSite ID.	Date	Area 100 m^2	Total # Cutthroat	Cutthroat 1st Pass /100 m^2	Total # Brook Trout	Brook Trout 1st Pass /100 m^2
	31	5231209303	7/5/93	4.51	4	0.89	0	0
W. F. St. Maries River	31	5231209302	7/6/93	5.05	4	0.79	0	0
W. F. St. Maries River	31	5631200362	7/11/00	2.29	2	0.87	26	6.99
W. F. St. Maries River	31	5231209312	8/1/93	1.51	4	2.65	11	7.28
Keeler Creek	31	5231209307	7/7/73	3.33	12	3.61	5	1.5
Keeler Creek	31	5631200361	7/11/00	1.42	11	4.23	2	1.41
Keeler Creek	31	5231209306	7/6/93	2.32	6	2.59	0	0
Keeler Creek	31	5231209305	7/6/93	103	2	1.94	0	0

Figure 10. W. F. St. Maries River and Keeler Creek (LMU 31) brook trout suppression sites, 2000, with table showing survey history.

RESULTS

All data collected for stream characteristics, electrofishing data, and species occurrence and abundance are presented in Appendix tables A1- A16.

Landscape Management Units – (LMU)

LMU 15 – Mica Creek

In LMU 15, we conducted surveys at three stream sites in 2000. The mean elevation across the three sites was 965 m; with the mean transect length and area being 97.6 m long and 201 m^2, respectively (Table A17). These transects have lower maximum weekly maximum temperature (MWMT) than other LMU transects, with a mean of 13.6°C, although this consists of a sample size of only two transects (Table A3). The mean for percent slope, percent fines, and percent pools for the three transects were 2.9% slope, 6.6% fines, and 44.7% pools.

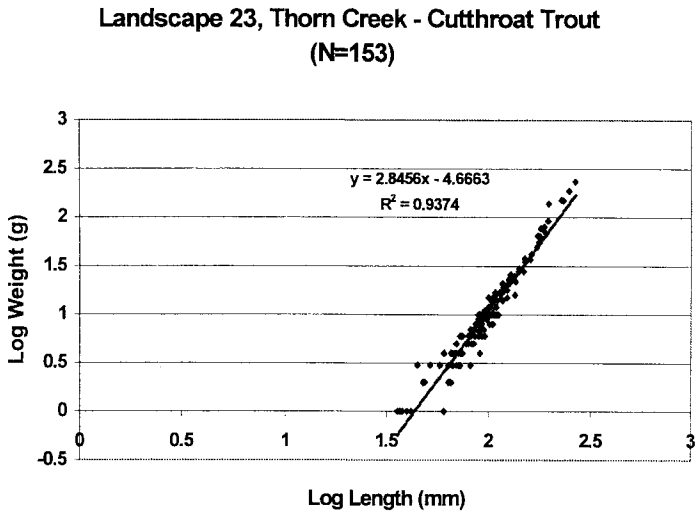
In the three sites surveyed, all sites had westslope cutthroat and brook trout, with no sites documenting the presence of rainbow trout (Table A18). The mean density of cutthroat trout across all transects was 21.3/100 m^2, with 83% of these fish less than 90 mm long (Table A18). Brook trout were found at lower densities at 8.9/100 m^2, with 39% of these trout less than 90 mm long. About 19% of the brook trout, and 6% of the cutthroat trout were larger than 150 mm FL. The mean biomass of all salmonids combined was 394.4g/100 m^2. The weight-length relationships (log-transformed fork lengths) of all cutthroat and brook trout sampled in LMU 15 are graphed in Figure 11.

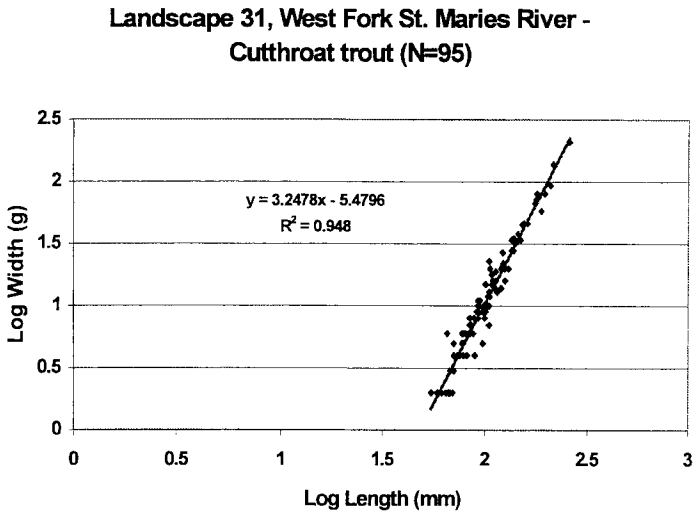
The only other fish encountered in the transects were sculpin, which were found in all transects with a mean density of 75.6/100 m^2. Tailed frogs were found in all three transects with densities of tadpoles and adults being 125.2 tadpoles/100 m^2 and 9.6 frogs/100 m^2 (Table A14 and A15), respectively. Idaho giant salamanders were found in 2 (67%) site with a density of 0.99 salamanders/100 m^2 (Table A16).

LMU 23 – Thorn Creek

In LMU 23, we conducted surveys at five stream sites in 2000. The mean elevation across the five sites was 842 m; with the mean transect length and area being 102.5 m long and 177 m^2, respectively (Table A17.). These transects has higher MWMT than other LMU transects, with a mean of 17.8°C (Table A3.). The mean for percent slope, percent fines, and percent pools for the five transects were 4.2% slope, 28.3% fines, and 48.2% pools.

In the five sites surveyed, westslope cutthroat trout were the only salmonid present, with no sites documenting the presence of other salmonids (Table A18). The mean density of cutthroat trout across all transects was 26.5/100 m^2, with 59% of these fish less than 90 mm long (Table A18). About 7% of the cutthroat trout were larger than 150 mm FL. The mean biomass of cutthroat trout was 325.3g/100 m^2. The weight-length relationship (log-transformed fork lengths) of all cutthroat sampled in LMU 23 is graphed in Figure 12.





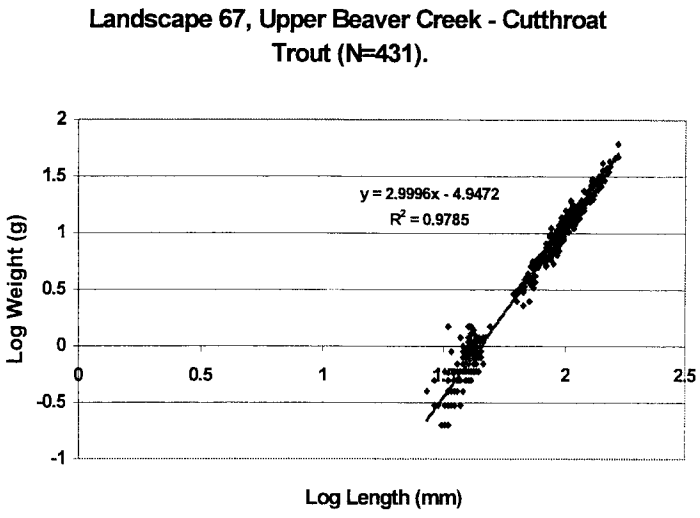


Figure 12. The weight-length relationship (log-transformed fork length) in westslope cutthroat trout from 3 LMUs on PCOA, 2000.

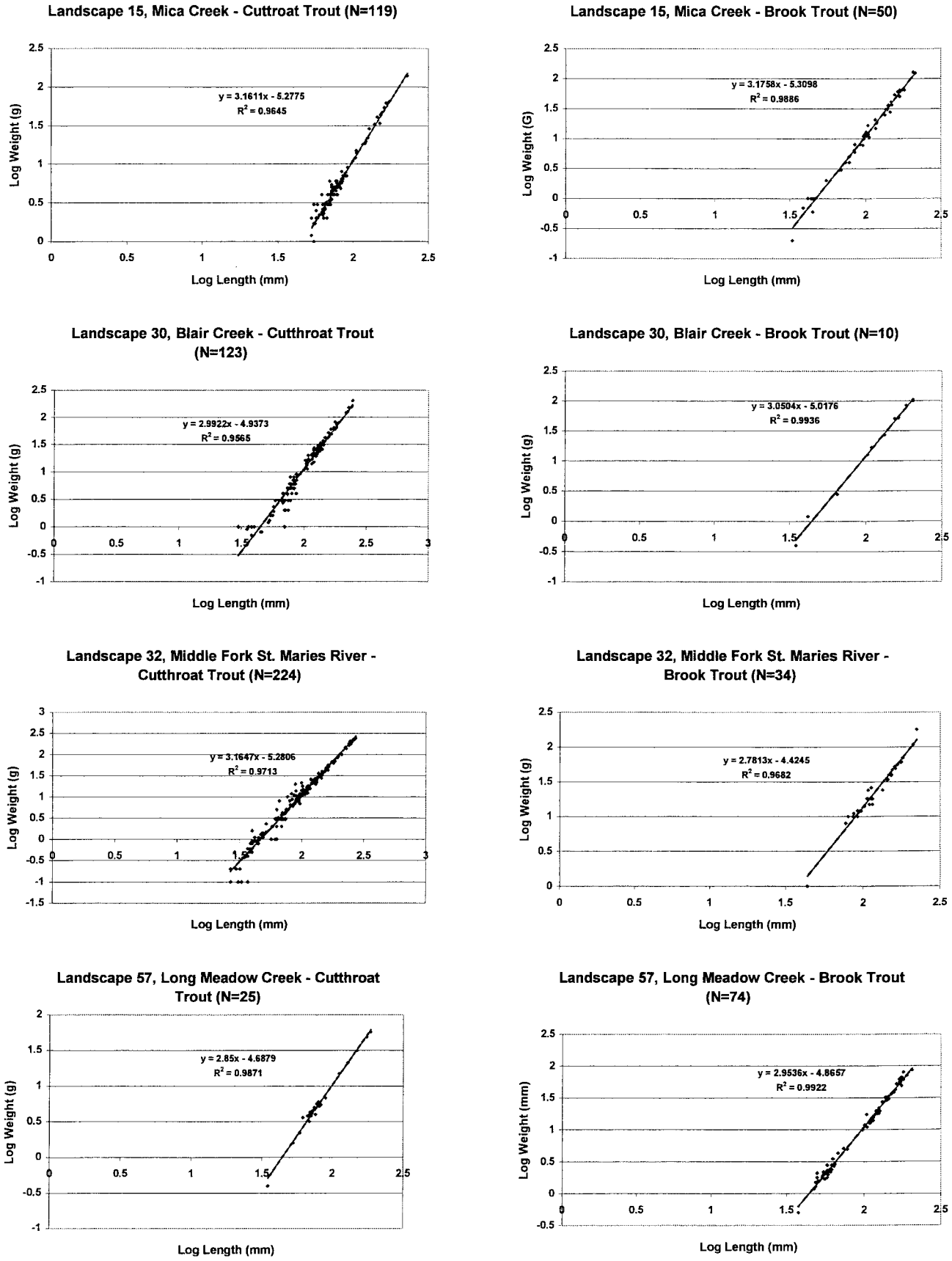


Figure 11. The weight-length relationship (log transformed fork length) in westslope cutthroat and brook trout from 4 LMUs on PCOA, 2000.

The only other fish encountered at the stream sites were sculpin, which were found in three (60%) transects with a mean density of 31.7/100 m^2 (Table A11). Tailed frogs were not found in any transects (Table A14 and A15). However, Idaho giant salamanders were found in one (20%) site with a density of 0.6 salamanders/100 m^2 (Table A16).

LMU 30 – Blair Creek

In LMU 30, we conducted surveys at six stream sites in 2000. The mean elevation across the six sites was 965 m, with the mean transect length and area being 120 m long and 563 m^2, respectively (Table A17). Across the six transects mean MWMT was 15°C (Table A3). The mean for percent slope, percent fines, and percent pools for the six transects were 2.2% slope, 25.5% fines, and 31.7% pools.

In the six sites surveyed, all sites had westslope cutthroat trout, one site (17%) with brook trout, and no sites documenting the presence of rainbow trout (Table A18). The mean density of cutthroat trout for all transects was 4.12/100 m^2, with 36% of these fish less than 90 mm long (Table A18). Brook trout were found at lower densities at 0.29/100 m^2, with 31% of these trout less than 90 mm long. About 34% of the brook trout and 17% of the cutthroat trout were larger than 150 mm FL. The mean biomass of all salmonids combined was 95.5g/100 m^2. The weight-length relationships (log-transformed fork lengths) of all cutthroat and brook trout sampled in LMU 30 are graphed in Figure 11.

The only other fish encountered in the transects were sculpin, which were found in all six transects with a mean density of 23.7/100 m^2. Tailed frogs were found in five transects (83%) with densities of tadpoles and adults being 21.9 tadpoles/100 m^2 and 0.1 frogs/100 m^2 (Table A14 and A15), respectively.

LMU 31 – W. F. St. Maries River

In LMU 31, we conducted surveys at five stream sites in 2000. The mean elevation across the five sites was 929 m; with the mean transect length and area being 94.9 m long and 187 m^2, respectively (Table A17). These transects had a mean MWMT of 16.8°C. The mean for percent slope, percent fines, and percent pools for the five transects were 2.0% slope, 23.8% fines, and 45.1% pools.

In the five sites surveyed, all sites had westslope cutthroat and two (40%) sites documented brook trout. No sites documented the presence of rainbow trout (Table A18). The mean density of cutthroat trout across all transects was 10.9/100 m^2, with 40% of these fish less than 90 mm long (Table A18). Brook trout were found at lower densities at 3.0/100 m^2, with 87% of these trout less than 90 mm long. About 7% of the brook trout, and 12% of the cutthroat trout were larger than 150 mm FL. The mean biomass of all salmonids combined was 234.1g/100 m^2. The weight-length relationships (log-transformed fork lengths) of all cutthroat trout sampled in LMU 31 are graphed in Figure 13.

The other fish encountered in the transects were sculpin and speckled dace (Table A13). Sculpin were found in all transects with a mean density of 76.5 /100 m^2. Speckled dace were found in one transect at HydroSite 362 at a mean density of 0.21 /100 m^2. Tailed frog tadpoles were found in three transects (60%) and adult tailed frogs in two transects (40%) with densities of tadpoles and adults being 136.1 tadpoles/100 m^2 and 0.9 frogs/100 m^2 across the LMU (Table A14 and A15). Idaho giant salamanders were found in one (20%) site with a density of 0.11 salamanders/100 m^2 (Table A16).

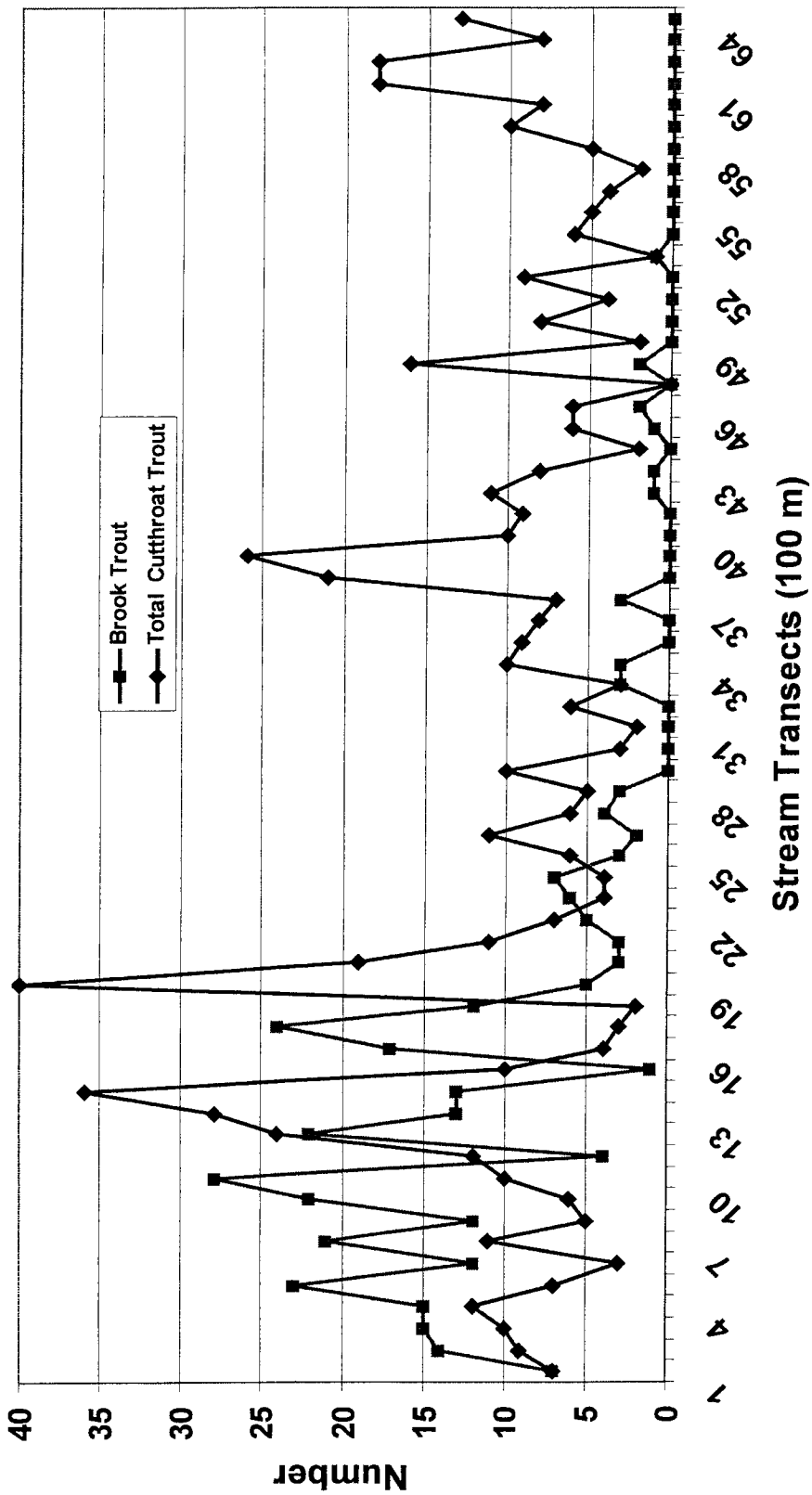


Figure 13. The total number of brook (N=346) and westslope cutthroat trout (N=600) in stream reaches sampled in the W. F. St. Maries River (Transects 1-18) and Keeler Creek (Transects 19-65), 2000.

LMU 32 – M. F. St. Maries River

In LMU 32, we conducted surveys at five stream sites in 2000. The mean elevation across the five sites was 1026 m; with the mean transect length and area being 125.1 m long and 487 m^2, respectively (Table A17). These transects had a mean MWMT of 15.3°C. The mean for percent slope, percent fines, and percent pools for the five transects were 3.46 % slope, 22.2% fines, and 27% pools.

Of the five sites surveyed, all sites had westslope cutthroat and one (20%) site documented brook trout. No sites documented the presence of rainbow trout (Table A18). The mean density of cutthroat trout across all transects was 10.3/100 m^2, with 53% of these fish less than 90 mm long (Table A18). Brook trout were found at lower densities at 2.2/100 m^2, with 45% of these trout less than 90 mm long. About 22% of the brook trout and 10% of the cutthroat trout were larger than 150 mm FL. The mean biomass of all salmonids combined was 259.2g/100 m^2. The weight-length relationships (log-transformed fork lengths) of all cutthroat and brook trout sampled in LMU 32 are graphed in Figure 11.

The other fish encountered in the transects were sculpin, long-nosed dace, mountain whitefish, and red-sided shiner (Table A13). Sculpin were found in all transects with a mean density of 47.6/100 m^2. The long-nosed dace, mountain whitefish, and red-sided shiner were found in one transect at HydroSite 334 at mean densities of 0.4 /100 m^2, 0.2/100 m^2, and 0.04/100 m^2, respectively. Tailed frog tadpoles were found in all transects, and adult tailed frogs in four transects (80%), with densities of tadpoles and adults being 40.8 tadpoles/100 m^2 and 2.9 frogs/100 m^2 across the LMU (Table A14 and A15). Idaho giant salamanders were found in 2 (40%) sites with a density of 0.33 salamanders/100 m^2 (Table A16).

LMU 57 – Long Meadow Creek

In LMU 57, we conducted surveys at five stream sites in 2000. The mean elevation across the five sites was 862 m, with the mean transect length and area being 116.1 m and 326 m^2, respectively (Table A17). These transects had a mean MWMT of 17.4°C (Table A3). The mean for percent slope, percent fines, and percent pools for the five transects were 2.9% slope, 6.6% fines, and 44.7% pools.

In the five sites surveyed, two sites (40%) had westslope cutthroat trout, three sites (60%) had brook trout, and three sites (60%) documented the presence of rainbow trout (Table A18). The mean density of cutthroat trout across all transects was 1.53/100 m^2, with 78% of these fish less than 90 mm long (Table A18). Brook trout were found at lower densities at 4.54/100 m^2, with 42% of these trout less than 90 mm long. Rainbow trout had the highest densities at 11.66/100 m^2, with 45% of these trout less than 90 mm long. About 7% of the cutthroat trout, 23% of the brook trout, and 3% of rainbow trout were larger than 150 mm FL. The mean biomass of all salmonids combined was 248.8g/100 m^2. The weight-length relationships (log-transformed fork lengths) of all cutthroat and brook trout sampled in LMU 57 are graphed in Figure 11.

The only other fish encountered in the transects were sculpin, which were found in one (20%) transect with a mean density of 2.1/100 m^2. No tailed frogs or Idaho giant salamanders were in any of the five transects sampled.

LMU 67 – Upper Beaver Creek

In LMU 67, we conducted surveys at five stream sites in 2000. The mean elevation across the five sites was 950 m, with the mean transect length and area being 141.8 m and 505 m^2, respectively (Table A17). These transects had a mean MWMT of 16.8°C. The mean for percent slope, percent fines, and percent pools for the five transects were 4.9% slope, 21.8% fines, and 20.1% pools.

In the five sites surveyed, all sites had westslope cutthroat and one (20%) site documented brook trout. No sites documented the presence of rainbow trout (Table A18). The mean density of cutthroat trout across all transects was 18.37/100 m^2 with 56% of these fish less than 90 mm long (Table A18). Brook trout were found at lower densities at 0.08/100 m^2 with only two individuals encountered. About 2% of the cutthroat trout were larger than 150 mm FL. The mean biomass of all cutthroat trout was 153.9g/100 m^2. The weight-length relationships (log-transformed fork lengths) of all cutthroat trout sampled in LMU 67 are graphed in Figure 12.

The only other fish encountered in the transects were sculpin (Table A13). Sculpin were found in four (80%) transects with a mean density of 10.7/100 m^2. Tailed frog tadpoles were found in all transects, and adult tailed frogs in four transects (80%) with densities of tadpoles and adults being 43.1 tadpoles/100 m^2 and 1.2 frogs/100 m^2 across the LMU (Table A14 and A15). Idaho giant salamanders were found in 1 (20%) site with a density of 0.3 salamanders/100 m^2 (Table A16).

Brook Trout Suppression

In conducting brook trout suppression in the headwaters of the W. F. St. Maries River and Keeler Creek, we electrofished 6,381 m of stream, 1,871 m of which was in the St. Maries River and 4,544 m in Keeler Creek (Tables A19-A22). Two pass removals were conducted in 1,837 m of the St. Maries River and 2,444 m of Keeler Creek. Total electrofishing time was approximately 140,000 seconds in the drainage.

We sampled 64 individual transects in the drainage, with sixty transects 100 m long and four transects (6%) less than 100 m. Three of the transects less than 100 m were located in the W. F. St. Maries River; in all instances there was a road culvert ending the transect short. The conductivity of all sites ranged from 20 to 60 microsiemens (ms), with an average of 36 ms across all sites. The MWMT throughout the summer and fall was 18.8°C at W. F. St. Maries River and 17.2°C at Keeler Creek (HydroSites 362 and 361) (Table A3).

We removed a total of 346 brook trout in all transects sampled, with a mean abundance of 54.2 brook trout/km (Figures 13-14). In comparison, we sampled 600 westslope cutthroat trout at a mean abundance of 94.0 cutthroat trout/km. We also sampled 2862 sculpin (448.5/km), 75 speckled dace (11.8/km), 211 red-sided shiner (33.1/km), 1 long-nosed dace (0.2/km), 1 northern

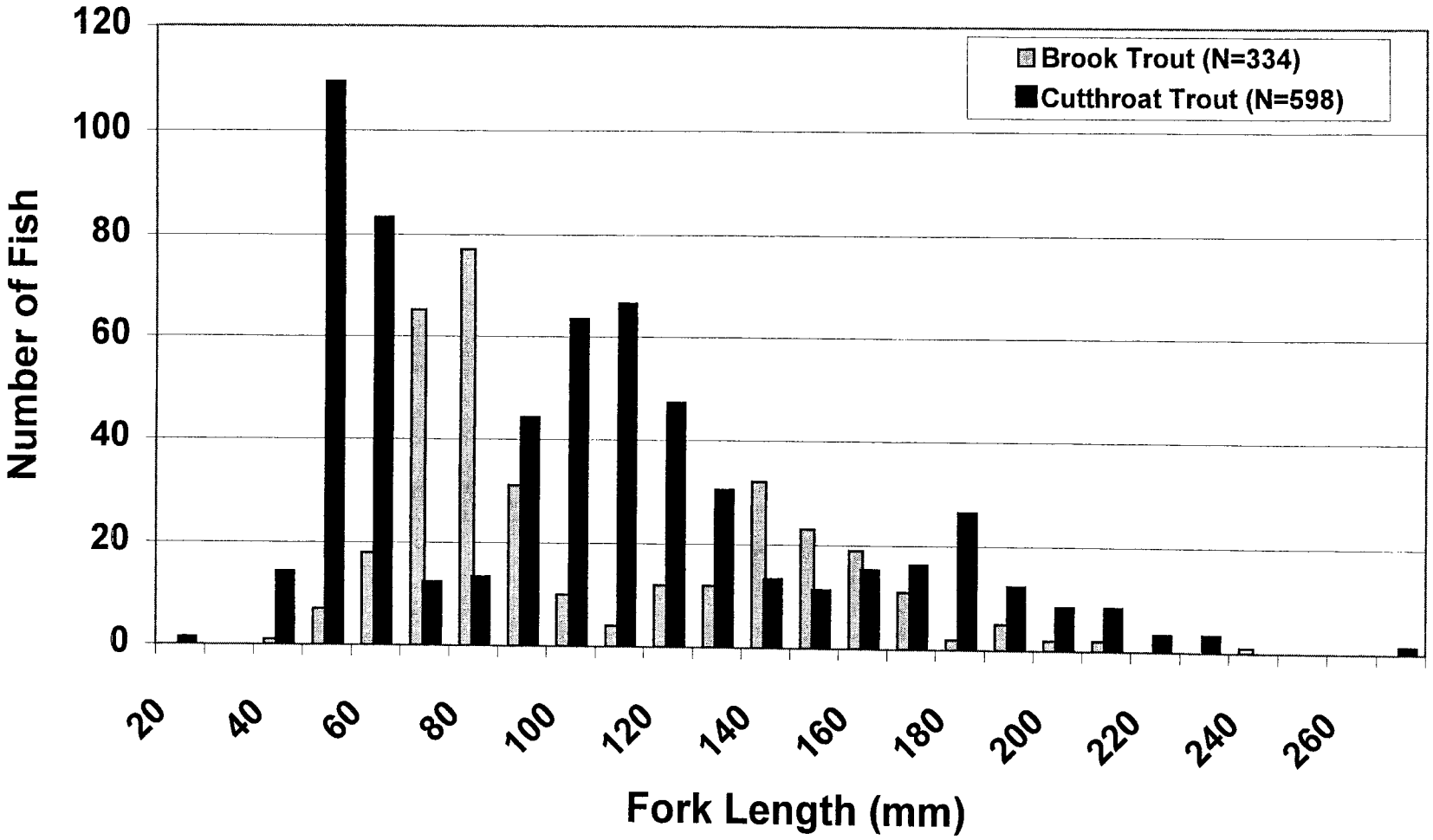


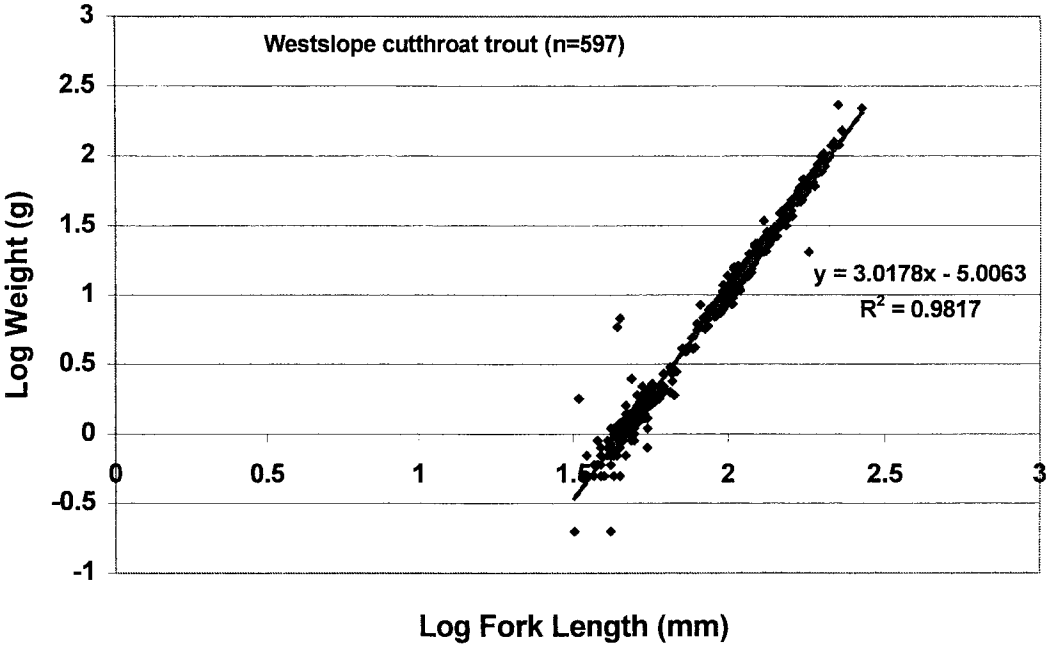
Figure 14. Length-frequency histogram (10 cm intervals) of westslope cutthroat and brook trout sampled in suppression sites on the W. F. St. Maries River and Keeler Creek, PCOA, 2000.

pikeminnow (0.2/km), and 4 Idaho giant salamanders (0.6/km) (Tables A20-24). No tailed frogs were documented in any suppression transects.

In the suppression samples, brook trout ranged in fork length from 34 to 232 mm, with a mean of 97.9 mm. Brook trout weights ranged from 0.4 to 109 g with a mean of 16.7 g. Cutthroat trout averaged slightly smaller with lengths ranging from 32 to 266 mm with a mean of 96.8 mm. Cutthroat trout ranged in weight from 0.2 to 220 g with a mean of 12.7 g. The weight-length relationship (log-transformed fork lengths) of all cutthroat and brook trout sampled in the suppression transects in the W. F. St. Maries River and Keeler Creek are graphed in Figure 15.

Overall, total westslope cutthroat trout numbers made up 63% of the salmonid community compared to 37% made up by brook trout in all transects. However, in the W.F. St. Maries River, brook trout made up 59% of the salmonid community with cutthroat trout only 41% (Figure 16). In contrast, Keeler Creek had only 13% brook trout with 87% cutthroat trout. This situation may be the result of a seasonal fish barrier, a road culvert at the confluence of Keeler Creek with the St. Maries River. The total numbers and percentage of brook trout decline rapidly from this confluence (Figures 17-18).

Comparisons between the percentage of salmonids sampled in the first and second electrofishing passes in the suppression samples were similar. For westslope cutthroat trout, 72% of the fish were collected in the first pass while 28% were collected in the second (Figure 19). For brook trout, 78% were collected in the first pass and 22% in the second pass (Figure 20). However, in comparison with all 30 watershed sites that had 3-pass populations estimates conducted (Tables A4 and A7) these estimates differed because of the additional third pass. The percentages of cutthroat trout in the watershed sites from the first, second and third passes were 59%, 28%, and 13%, respectively. For brook trout the numbers were 59%, 24%, and 17%.



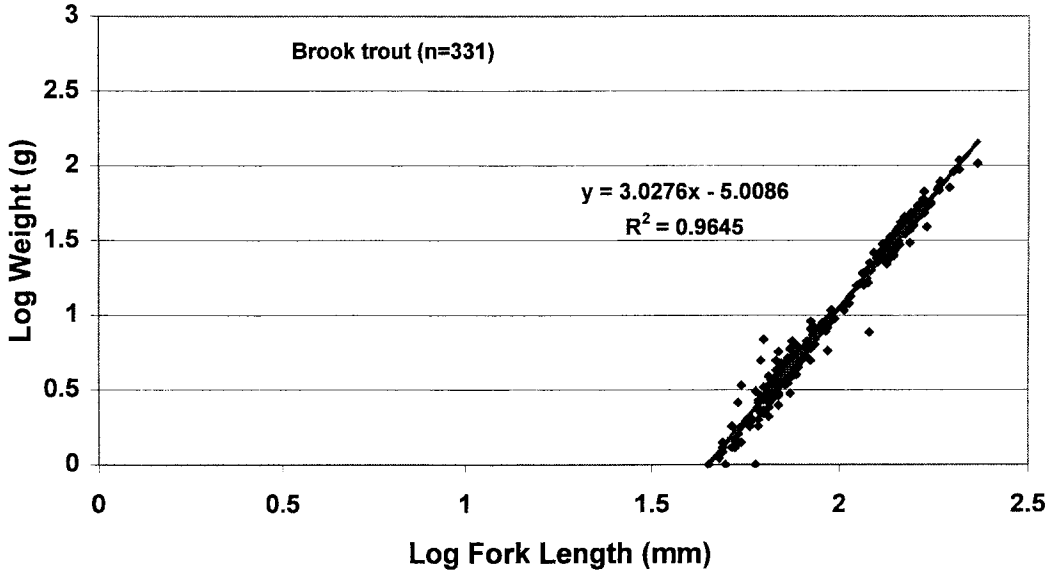


Figure 15. The weight-length relationship (log-transformed fork length) of westslope cutthroat trout and brook trout in W. F. St. Maries and Keeler Creek, 2000.

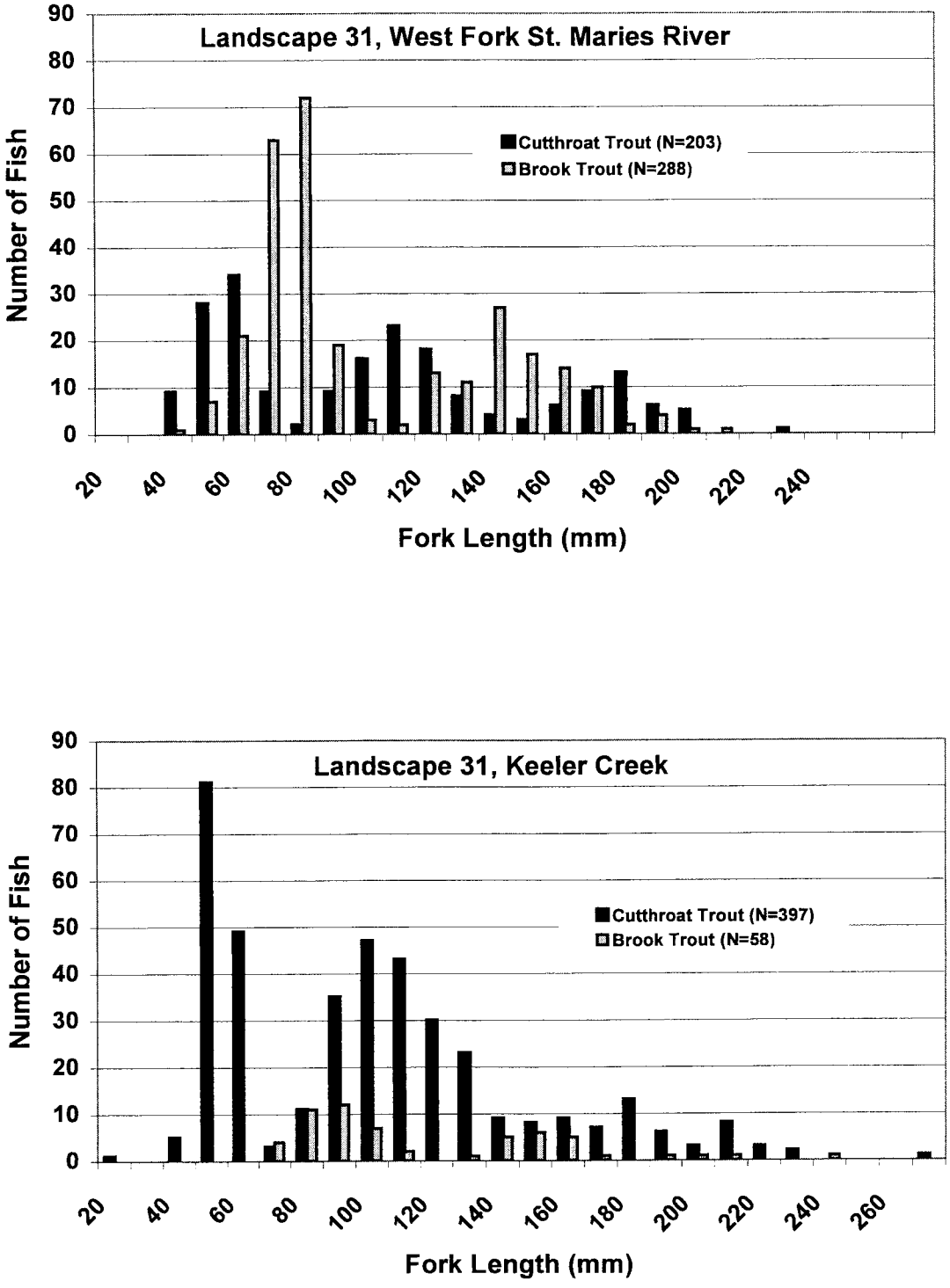


Figure 16. Length-frequency histograms comparing westslope cutthroat trout and brook trout in the W. F. St. Maries, and Keeler Creek, 2000.

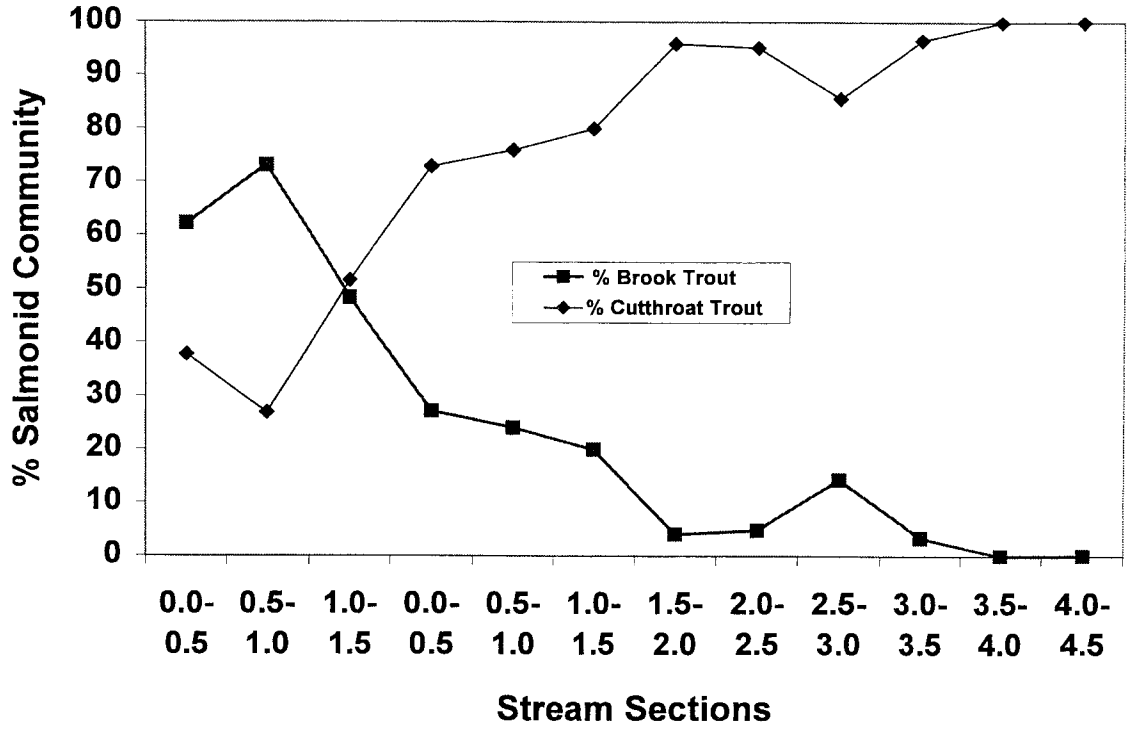


Figure 17. Percentage of total number of salmonids in 500 m stream sections of the W. F. St. Maries River (0.0 – 1.5 km) and Keeler Creek (0.0 – 4.5 km), 2000.

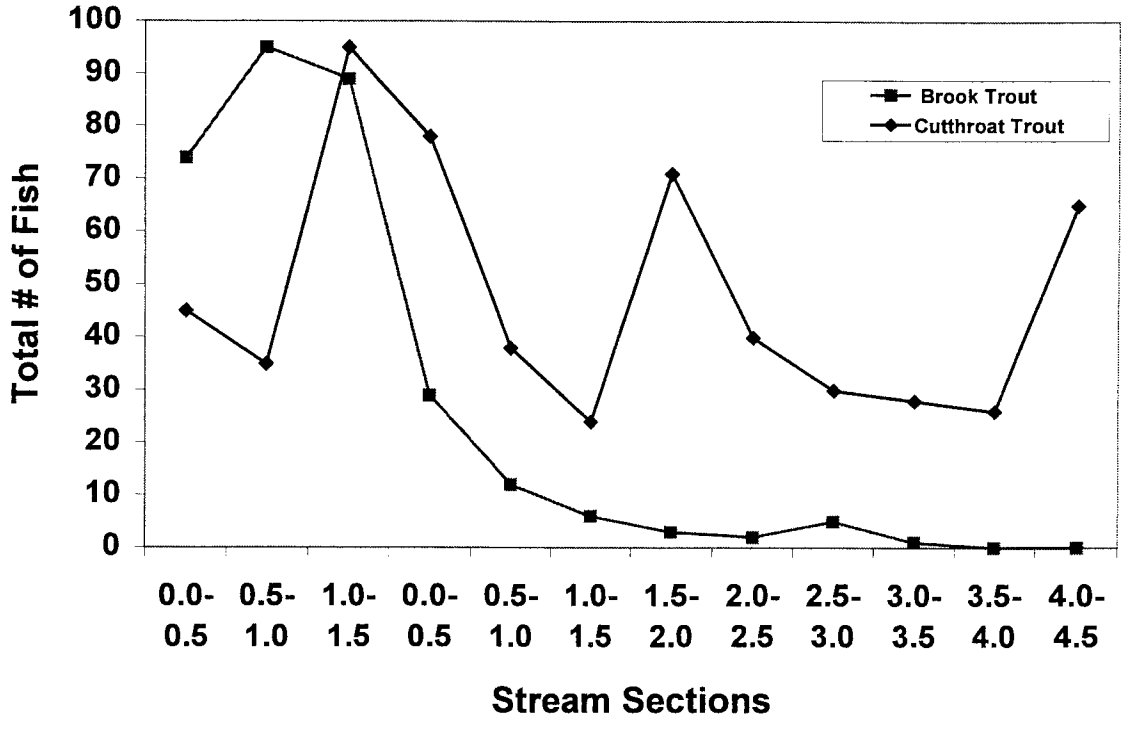


Figure 18. Total number of salmonids sampled in 500 m stream sections on the W. F. St. Maries River (0.0 – 1.5 km) and Keeler Creek (0.0 – 4.5 km), 2000.

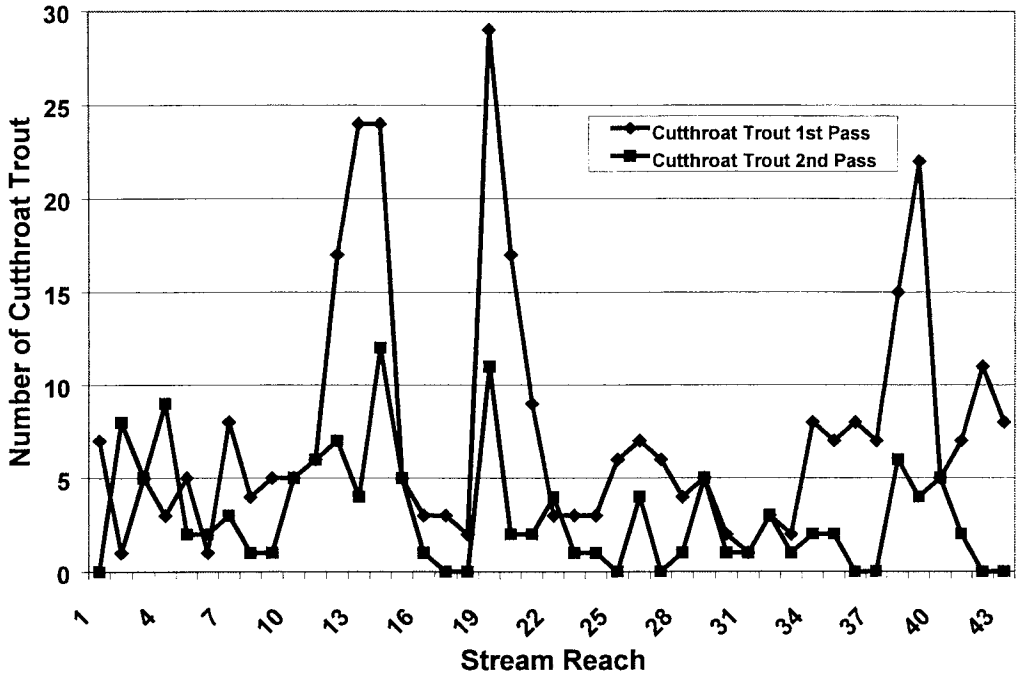


Figure 19. Westslope cutthroat trout sampled in 1st and 2nd electrofishing passes on W. F. St. Maries River (Transects 1 – 18) and Keeler Creek (19 –45), 2000.

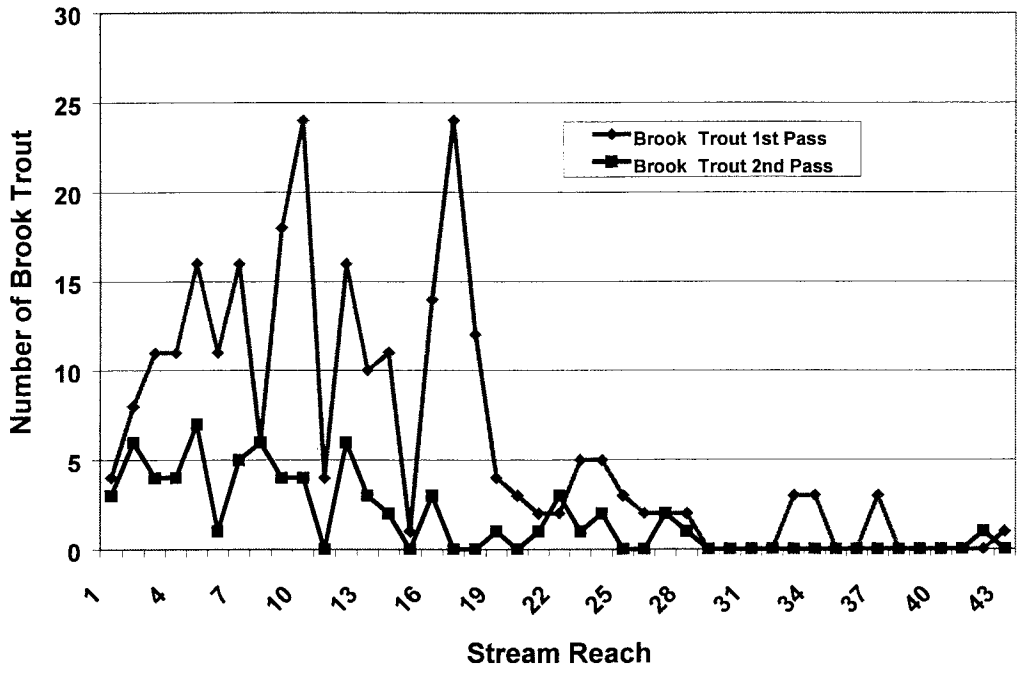


Figure 20. Brook Trout sampled in 1st and 2nd electrofishing passes on W. F. St. Maries River (Transects 1 – 18) and Keeler Creek (19 –45), 2000.

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APPENDICES

Table A1. Stream characteristics in 34 stream sites in 7 LMUs on PCOA, 2000.

Potlatch WA – Streams	Landscape Unit	HydroSite ID	Date	Latitude	Longitude	Elevation (m)	Transect Length (m)	Transect Area 100 m2
Engstrom Creek	15	370	7/23/00	471128	1161342	973	100.9	2.35
East Fork Mica Creek	15	371	7/23/00	471057.67	1161332.08	985	92.7	1.52
Tributary of Mica Creek	15	372	7/25/00	471155	1161241	938	99.1	2.15
Canyon Creek	23	366	7/18/00	471723.57	116306.26	796	100	2.64
Thorn Creek	23	367	7/7/00	471533.39	1162606.46	887	103	2.32
South Fork Thorn Creek	23	368	7/7/00	471458.17	1162425.24	929	105.5	1.24
Tributary to Thorn Creek	23	369	7/18/00	471548.94	1162518.75	913	100	0.67
Jaycott Creek	23	377	8/17/00	471945	1162950	683	104.2	1.96
Olsen Creek	30	355	9/20/00	470509	1161954	867	100	4.76
Childs Creek	30	356	8/14/00	470430	1161832	881	119.4	5.72
Blair Creek	30	357	6/28/00	470238.9	1161558.23	886	104.2	2.82
Merry Creek	30	358	9/17/00	470113	1161328	878	193.6	14.99
Corbett Creek	30	359	6/25/00	470215.28	1161302.39	920	104.5	3.43
Mann Creek	30	360	6/24/00	470323.3	1161050.97	986	98.5	2.04
Keeler Creek	31	361	7/11/00	465642.82	1161846.68	922	100	1.42
West Fork St. Maries River	31	362	7/11/00	465715.52	1161818.68	915	79.7	2.29
Catspur Cr. - below Log Cr.	31	363	7/10/00	465783.46	1161515.11	894	89.1	2.29
Catspur Cr. - above Kitten Cr.	31	364	7/9/00	465763.59	1161373.92	951	100	1.73
Kitten Creek	31	365	7/10/00	465736	1161338	964	106.1	1.6
Middle Fork St. Maries River (Upper)	32	334	8/8/00	465993.46	1161006.37	941	224.2	14.03
Middle Fork St. Maries River	32	349	6/27/00	465643.30	1161149.70	1131	100	3.12
Upper Trib. of St. Maries River	32	354	6/27/00	465677.10	1161112.59	1112	93.6	1.42
White Rock Creek	32	375	8/9/00	465901.18	116989.62	1028	103	2.64
Flewsie Creek	32	376	6/26/00	470055.28	1161150.91	918	104.5	3.16
Three Bear Creek	57	379	7/20/00	464136.15	1162056.26	871	100	2.88
Chambers Creek	57	380	7/20/00	464222	1162032	888	100	1.9

Table A1. continued

Potlatch WA – Streams	Landscape Unit	HydroSite ID	Date	Latitude	Longitude	Elevation (m)	Transect Length (m)	Transect Area 100 m2
Long Meadow Creek	57	381	7/21/00	464320	1161814	805	176.4	8.16
Oviatt Creek	57	382	7/21/00	464411.06	116167.47	829	99.7	2.36
McGary Creek	57	383	7/21/00	464538.52	1162205.92	917	104.5	0.99
Bertha Creek	67	350	8/4/00	464504	1154448	993	163.9	6.64
Bingo Creek	67	351	8/3/00	464519	1154404	963	106.1	2.36
South Fork Beaver Creek	67	352	8/3/00	464505	1154449	1009	120.6	5.67
East Fork Beaver Creek	67	353	8/5/00	464503	1154022	886	218.2	9.21
Harlan Creek	67	374	8/5/00	464541	1154130	901	100	1.38

Table A2. Electrofishing survey data for 34 stream sites in 7 LMUs on PCOA, 2000.

Potlatch WA – Streams	Landscape Unit	HydroSite ID	Electrofishing Passes	Electrofishing Total Time (s)	1st Pass Time (s)	2nd Pass Time (s)	3rd Pass Time (s)	Conductivity (microsiemens)	Volts	Amps
Engstrom Creek	15	370	3	2556	1053	736	767	40	500	0.15
East Fork Mica Creek	15	371	3	2523	917	928	678	50	400	.15-.20
Tributary of Mica Creek	15	372	3	2222	835	697	690	50	500	I-5
Canyon Creek	23	366	3	2182	808	671	703	60	600	1.5-2.5
Thorn Creek	23	367	3	2879	1075	939	865	50	700	1.5-2.0
South Fork Thorn Creek	23	368	3	3214	1254	1079	881	30	700	0.8
Tributary to Thorn Creek	23	369	1	387	387	NA	NA	30	40	0.25-1.25
Jaycott Creek	23	377	3	1264	592	283	389	70	400	0.2
Olsen Creek	30	355	3	4058	1619	1350	1089	60	500	0.3
Childs Creek	30	356	1	?	NA	NA	NA	30	NA	NA
Blair Creek	30	357	3	2727	900	1080	747	40	700	1.0 –2.0
Merry Creek	30	358	2	4689	2807	1882	NA	40	NA	NA

Table A2. continued

Potlatch WA – Streams	Landscape Unit	HydroSite ID	Electrofishing Passes	Electrofishing Total Time (s)	1st Pass Time (s)	2nd Pass Time (s)	3rd Pass Time (s)	Conductivity (microsiemens)	Volts	Amps
Mann Creek	30	360	3	2313	800	648	865	40	700	1.5 –2.0
Keeler Creek	31	361	3	1516	891	625	???	30	700	2.0-2.5
West Fork St. Maries River	31	362	3	2512	1034	832	646	30	700	2
Catspur Cr. – below Log Cr.	31	363	3	2155	860	725	570	30	700	1
Catspur Cr. – above Kitten Cr.	31	364	3	2266	786	747	733	40	700	1.5
Kitten Creek	31	365	3	2425	849	763	813	20	700	1
Middle Fork St. Maries River	32	334	2	4440	2124	2316	NA	NA	600	0.24
Middle Fork St. Maries River	32	349	3	2927	924	1041	962	20	700	1.0-1.5
Upper Trib. of St. Maries River	32	354	3	1974	724	540	710	20	700	1.0-1.5
White Rock Creek	32	375	3	3406	1163	1055	1188	10	600	0.08
Flewsie Creek	32	376	3	2529	944	851	734	30	700	1.0-2.0
Three Bear Creek	57	379	3	1888	748	643	497	40	500	.5-2.0
Chambers Creek	57	380	3	1820	830	450	540	60	700	1.2
Long Meadow Creek	57	381	3	5153	1981	1931	1241	70	400	.2-.4
Oviatt Creek	57	382	3	2194	847	657	690	60	500	.1-.4
McGary Creek	57	383	3	1511	598	454	459	50	400	.05-.4
Bertha Creek	67	350	3	5062	1892	1743	1427	20	500	1.5-1.8
Bingo Creek	67	351	3	2262	880	693	689	30	400	NA
South Fork Beaver Creek	67	352	3	4153	1419	1436	1298	30	400	1.0-1.2
East Fork Beaver Creek	67	353	3	2889	1087	1033	769	40	600	1.2
Harlan Creek	67	374	3	2276	842	835	599	40	400	1.2

Table A3. Stream habitat characteristics in 34 stream sites in 7 LMUs on PCOA, 2000.

Potlatch WA - Streams	Landscape Unit	HydroSite ID.	Maximum Weekly Maximum Temp. (°C)	Electrofishing Water Temp. (°C)	Shade %	Slope %	Fines %	Pool %	Pool Volume m^3
Engstrom Creek	15	370	NA	11.5	22.08	3.5	7.33	38.14	2.62
East Fork Mica Creek	15	371	13.5	13.5	69.42	4	4	70.92	3.93
Tributary of Mica Creek	15	372	13.7	13	72.75	1.2	8.67	25.08	1.04
Canyon Creek	23	366	19.5	15	77.92	2	4.64	45.76	1.90
Thorn Creek	23	367	19.7	17	33.75	2	33.33	74.41	5.63
South Fork Thorn Creek	23	368	14.2	11	90	2	52.67	41.67	1.18
Tributary to Thorn Creek	23	369	NA	NA	81.58	1.5	46.67	43.33	0.16
Jaycott Creek	23	377	17.9	11	63.42	13.3	4	35.76	0.79
Olsen Creek	30	355	14.4	9	65.58	2.3	19.33	4.24	4.21
Childs Creek	30	356	12.7	NA	69.58	5	2.01	27.66	7.01
Blair Creek	30	357	14.9	12.5	75.92	1.9	29.80	14.08	1.93
Merry Creek	30	358	18.8	12	7.5	1	6.49	47.10	62.57
Corbett Creek	30	359	15.4	10	23.58	1.5	61.15	54.78	11.77
Mann Creek	30	360	13.6	10	19.25	1.5	34.21	42.77	5.14
Keeler Creek	31	361	17.2	14	11.75	1	71.79	80.61	16.14
West Fork St. Maries River	31	362	18.8	17	13.33	1	27.33	32.70	7.16
Catspur Cr. - below Log Cr.	31	363	18.4	16	4.25	1.5	4.67	54.08	7.40
Catspur Cr. - above Kitten Cr.	31	364	16.3	12	67.92	3.5	8.05	34.55	3.20
Kitten Creek	31	365	13.5	10	63	3	7.33	23.71	0.81
Middle Fork St. Maries River	32	334	17.5	NA	22.2	2.5	10	21.22	11.80
Middle Fork St. Maries River	32	349	14.2	NA	29	2.3	21.33	29.39	3.27
Upper Trib. of St. Maries River	32	354	11.8	9	29.17	5	28	22.33	0.86
White Rock Creek	32	375	NA	12.5	82.17	6	8.5	4.41	0.92
Flewsie Creek	32	376	17.7	13.5	25.58	1.5	43.33	57.68	4.06

Table A3. continued

Potlatch WA - Streams	Landscape Unit	HydroSite ID.	Maximum Weekly Maximum Temp. (°C)	Electrofishing Water Temp. (°C)	Shade %	Slope %	Fines %	Pool %	Pool Volume m^3
Three Bear Creek	57	379	18.2	17	91.17	1.2	24	44.24	2.55
Chambers Creek	57	380	16.8	16	89.75	4.6	36	11.86	1.51
Long Meadow Creek	57	381	19.4	19		2	NA	54.12	47.44
Oviatt Creek	57	382	16.7	15.5	65.5	10.3	6	51.01	1.92
McGary Creek	57	383	15.8	14	80.17	3.2	31.79	50	0.46
Bertha Creek	67	350	13	13	46.75	3.9	18.67	26.80	3.08
Bingo Creek	67	351	16.5	13.5	21.9	2.4	32.67	14.57	3.26
South Fork Beaver Creek	67	352	16	15	45.33	7.4	16.11	26.13	6.28
East Fork Beaver Creek	67	353	16	15.5	24.67	3.3	21.33	15.56	10.42
Harlan Creek	67	374	16.4	15	62.75	7.4	20	17.27	1.83

Table A4. The number, density, and population estimates of westslope cutthroat trout in 34 stream sites from 7 LMUs on PCOA, 2000.

Potlatch WA – Streams	Landscape Unit	HydroSite ID.	Total # Cutthroat	Electrofishing Pass # 1st	2nd	3rd	Cutthroat /100 m^2	Cutthroat 1st Pass /100 m^2	Population Estimate	95% C.I.	Population Estimate /100 m^2	Capture Probability
Engstrom Creek	15	370	46	29	10	7	19.57	12.34	49	(46-56)	20.85	0.58
East Fork Mica Creek	15	371	35	23	11	1	23.03	15.13	35	(35-38)	23.03	0.73
Tributary of Mica Creek	15	372	47	33	9	5	21.86	15.35	48	(47-52)	22.33	0.68
Canyon Creek	23	366	72	47	16	7	27.27	17.80	73	(70-79)	27.65	0.64
Thorn Creek	23	367	55	29	15	11	23.71	12.50	66	(55-83)	28.45	0.44
South Fork Thorn Creek	23	368	54	35	15	4	43.55	28.23	56	(54-61)	45.16	0.65
Tributary to Thorn Creek	23	369	11	11	NA	NA	16.42	16.42	NA	NA	NA	NA
Jacot Creek	23	377	42	27	10	5	21.43	13.78	44	(42-49)	22.45	0.62
Olsen Creek	30	355	16	13	3	0	3.36	2.73	16	(16-17)	3.36	0.84

Table A4. continued

Potlatch WA – Streams	Landscape Unit	HydroSite ID.	Total # Cutthroat	Electrofishing Pass # 1st	2nd	3rd	Cutthroat /100 m^2	Cutthroat 1st Pass /100 m^2	Population Estimate	95% C.I.	Population Estimate /100 m^2	Capture Probability
Childs Creek	30	356	43	43	NA	NA	7.52	7.52	NA	NA	NA	NA
Blair Creek	30	357	30	16	12	2	10.64	5.67	32	(30-38)	11.35	0.58
Merry Creek	30	358	17	7	10	NA	1.13	0.47	18	(17-23)	1.20	0.57
Corbett Creek	30	359	11	7	3	1	3.21	2.04	11	(11-13)	3.21	0.69
Mann Creek	30	360	22	16	3	3	10.78	7.84	22	(22-24)	10.78	0.71
Keeler Creek	31	361	11	6	4	1	7.75	4.23	11	(11-13)	7.75	0.05
West Fork St. Maries River	31	362	2	1	1	0	0.87	0.44	2	(2-3)	0.87	0.67
Cat Spur Creek	31	363	24	15	6	3	10.48	6.55	25	(24-29)	10.92	0.62
Cat Spur Creek	31	364	34	22	9	3	19.65	12.72	35	(34-39)	20.23	0.65
Kitten Creek	31	365	31	21	10	0	19.38	13.13	31	(31-33)	19.38	0.76
Middle Fork St. Maries River	32	334	130	70	60	NA	9.27	4.99	311	(130-578)	22.17	0.24
Middle Fork St. Maries River	32	349	49	26	19	4	15.71	8.33	53	(49-61)	16.99	0.56
Upper Trib. Of St. Maries River	32	354	19	9	4	6	13.38	6.34	25	(19-41)	17.61	0.36
White Rock Creek	32	375	39	25	10	4	14.77	9.47	40	(39-44)	15.15	0.65
Flewsie Creek	32	376	13	5	5	3	4.11	1.58	16	(13-26)	5.06	0.39
Three Bear Creek	57	379	0	0	0	0	0	0	0	0	0	0
Chambers Creek	57	380	0	0	0	0	0	0	0	0	0	0
Long Meadow Creek	57	381	0	0	0	0	0	0	0	0	0	0
Oviatt Creek	57	382	5	5	0	0	2.12	0	NA	NA	NA	NA
McGary Creek	57	383	20	14	3	3	20.20	14.14	20	(20-23)	20.20	0.69
Bertha Creek	67	350	61	32	19	10	9.19	4.82	71	(61-86)	10.69	0.47
Bingo Creek	67	351	177	94	51	32	75	39.83	215	(184-246)	91.10	0.44
South Fork Beaver Creek	67	352	43	22	14	7	7.58	3.88	50	(43-63)	8.82	0.47
East Fork Beaver Creek	67	353	100	40	35	25	10.86	4.34	172	(100-262)	18.68	0.25
Harlan Creek	67	374	83	55	23	5	60.14	39.86	86	(83-92)	62.32	0.66

Table A5. Mean, minimum, and maximum length (mm) and weight (g) of westslope cutthroat trout sampled in 34 stream sites in 7 LMUs on PCOA, 2000.

Potlatch WA – Streams	Landscape Unit	HydroSite ID.	Total # Cutthroat	Mean Length (mm)	Minimum Length	Maximum Length	Mean Weight (g)	Minimum Weight	Maximum Weight
Engstrom Creek	15	370	46	94.91	53	228	15.05	2	140
East Fork Mica Creek	15	371	35	72.2	25	152	5.48	0.2	43.6
Tributary of Mica Creek	15	372	47	73.37	28	173	6.48	0.2	65
Canyon Creek	23	366	72	80.94	30	187	NA	1	72
Thorn Creek	23	367	55	85.4	33	265	NA	1	235
South Fork Thorn Creek	23	368	54	76.67	52	140	5.59	1	30
Tributary to Thorn Creek	23	369	11	NA	35	41	NA	NA	NA
Jaycott Creek	23	377	42	88.55	31	178	NA	2	65
Olsen Creek	30	355	16	132.63	35	246	52.41	0.7	203
Childs Creek	30	356	43	95.3	30	183	16.02	1	82
Blair Creek	30	357	30	92.12	58	157	18.29	2	52
Merry Creek	30	358	17	87.06	52	153	10.18	1.2	40.3
Corbett Creek	30	359	11	119.45	70	242	29.27	2	155
Mann Creek	30	360	22	121.37	70	223	27.47	1	125
Keeler Creek	31	361	11	121.27	74	208	27.82	4	94
West Fork St. Maries River	31	362	2	127	105	149	20.5	7	34
Cat Spur Creek	31	363	24	108.38	23	258	31.67	0.2	209
Cat Spur Creek	31	364	34	94.97	22	179	13.71	0.1	80
Kitten Creek	31	365	31	96.42	59	188	10.79	2	58
Middle Fork St. Maries River	32	334	130	102.38	36	272	28.52	0.4	245
Middle Fork St. Maries River	32	349	49	90.37	57	255	14.43	1	198
Upper Trib. Of St. Maries River	32	354	19	73.79	46	132	7.28	1	22
White Rock Creek	32	375	39	61.46	23	154	6.31	0.1	55
Flewsie Creek	32	376	13	131.54	77	166	27.85	10	52
Three Bear Creek	57	379	0	0	0	0	0	0	0

Table A5. continued

Potlatch WA – Streams	Landscape Unit	HydroSite ID.	Total # Cutthroat	Mean Length (mm)	Minimum Length	Maximum Length	Mean Weight (g)	Minimum Weight	Maximum Weight
Oviatt Creek	57	382	5	106.8	35	187	23.02	0.4	57.5
McGary Creek	57	383	20	82.1	53	150	7.14	1.6	31.7
Bertha Creek	67	350	61	78.93	30	135	7.51	0.2	29
Bingo Creek	67	351	177	78.19	33	165	8.92	0.3	61.8
South Fork Beaver Creek	67	352	43	117.58	40	165	19.3	1.5	47.6
East Fork Beaver Creek	67	353	100	71.27	32	160	6.75	0.3	46.2
Harlan Creek	67	374	83	73.81	27	142	6.98	0.2	36

Table A6. Community structure and biomass of westslope cutthroat, brook, and rainbow trout in 34 stream sites in 7 LMUS on PCOA, 2000.

Potlatch WA - Streams	Landscape Unit	HydroSite ID.	CT /100 m^2	CT < 90 mm /100 m^2	CT > 150 mm /100 m^2	CT g/ 100 m^2	BK /100 m^2	BK < 90 mm /100 m^2	BK > 150 mm /100 m^2	BK g/ 100 m^2	RB /100 m^2	RB < 90 mm /100 m^2	RB > 150 mm /100 m^2	RB g/ 100 m^2
Engstrom Creek	15	370	19.58	14.03	2.54	291.5	20.43	8.52	2.98	414.98	0	0	0	0
East Fork Mica Creek	15	371	23.07	21.05	0.67	126.6	1.98	0.66	0.66	57.89	0	0	0	0
Tributary of Mica Creek	15	372	19.98	19.06	0.46	134.2	1.39	0	0.93	67.44	0	0	0	0
Canyon Creek	23	366	27.26	13.25	2.26	262.5	0	0	0	0	0	0	0	0
Thorn Creek	23	367	23.75	14.65	3.89	610.3	0	0	0	0	0	0	0	0
South Fork Thorn Creek	23	368	43.70	35.49	0	241.9	0	0	0	0	0	0	0	0
Tributary to Thorn Creek	23	369	16.5	16.42	0	NA	0	0	0	0	0	0	0	0
Jaycott Creek	23	377	21.44	7.14	1.03	236.5	0	0	0	0	0	0	0	0
Olsen Creek	30	355	3.36	1.05	1.26	176.2	1.68	0.63	0.84	73.15	0	0	0	0
Childs Creek	30	356	7.51	1.25	0.89	120.5	0	0	0	0	0	0	0	0
Blair Creek	30	357	10.65	6.38	0.35	117.4	0	0	0	0	0	0	0	0

Table A6. continued

Potlatch WA - Streams	Landscape Unit	HydroSite ID.	CT /100 m^2	CT < 90 mm /100 m^2	CT > 150 mm /100 m^2	CT g/ 100 m^2	BK /100 m^2	BK < 90 mm /100 m^2	BK > 150 mm /100 m^2	BK g/ 100 m^2	RB /100 m^2	RB < 90 mm /100 m^2	RB > 150 mm /100 m^2	RB g/ 100 m^2
Mann Creek	30	360	10.79	3.97	2.84	255.9	0	0	0	0	0	0	0	0
Keeler Creek	31	361	7.75	2.11	2.11	215.5	1.41	1.41	0	2.82	0	0	0	0
West Fork St. Maries River	31	362	0.87	0	0.44	17.9	11.33	8.73	0.87	119.65	0	0	0	0
Cat Spur Creek	31	363	10.46	3.49	2.18	332.3	0	0	0	0	0	0	0	0
Cat Spur Creek	31	364	19.68	9.26	1.16	269.9	0	0	0	0	0	0	0	0
Kitten Creek	31	365	19.36	8.76	0.62	206.9	0	0	0	0	0	0	0	0
Middle Fork St. Maries River	32	334	9.27	3.63	1.43	264.0	0	0	0	0	0	0	0	0
Middle Fork St. Maries River	32	349	15.7	10.26	0.49	222.8	0	0	0	0	0	0	0	0
Upper Trib.of St. Maries River	32	354	13.35	10.56	0	95.1	0	0	0	0	0	0	0	0
White Rock Creek	32	375	14.76	12.13	0.38	90.2	0	0	0	0	0	0	0	0
Flewsie Creek	32	376	4.11	0.63	0.63	114.6	17.07	7.91	3.49	374.05	0	0	0	0
Three Bear Creek	57	379	0	0	0	0	15.95	9.03	1.04	192.5	21.15	14.57	0	147.1
Chambers Creek	57	380	0	0	0	0	0	0	0	0	7.88	2.10	0	124.4
Long Meadow Creek	57	381	0	0	0	0	0	0	0	0	13.97	4.90	0.80	208.5
Oviatt Creek	57	382	2.12	1.27	0.85	48.8	8.91	1.27	5.08	346.99	0	0	0	0
McGary Creek	57	383	20.15	16.16	0	144.2	7.05	5.05	1.01	62.02	0	0	0	0
Bertha Creek	67	350	9.19	5.87	0	69.1	0	0	0	0	0	0	0	0
Bingo Creek	67	351	75.03	44.93	0.42	578.8	0	0	0	0	0	0	0	0
South Fork Beaver Creek	67	352	7.58	1.08	0.53	147.4	0.35	0	0	8.11	0	0	0	0
East Fork Beaver Creek	67	353	10.86	6.73	0.11	72.6	0	0	0	0	0	0	0	0
Harlan Creek	67	374	59.94	36.15	0	410.3	0	0	0	0	0	0	0	0

Table A7. The number, density, and population estimates of brook trout in 34 stream sites in 7 LMUs on PCOA, 2000.

Potlatch WA - Streams	Landscape Unit	HydroSite ID.	Total # Brook Trout	Electrofishing Pass # 1st	2nd	3rd	Brook Trout /100 m^2	Brook Trout 1st Pass /100 m^2	Population Estimate	95% C.I.	Population Estimate /100 m^2	Capture Probability
Engstrom Creek	15	370	48	24	14	10	20.43	10.21	59	(48-77)	25.11	0.42
East Fork Mica Creek	15	371	3	3	0	0	1.97	1.97	NA	NA	NA	NA
Tributary of Mica Creek	15	372	3	2	0	1	1.40	0.93	3	(3-5)	1.40	0.6
Canyon Creek	23	366	0	0	0	0	0	0	0	0	0	0
Thorn Creek	23	367	0	0	0	0	0	0	0	0	0	0
South Fork Thorn Creek	23	368	0	0	0	0	0	0	0	0	0	0
Tributary to Thorn Creek	23	369	0	0	NA	NA	0	0	0	0	0	0
Jacot Creek	23	377	0	0	0	0	0	0	0	0	0	0
Olsen Creek	30	355	10	4	2	4	2.10	0.84	13	(10-24)	2.73	0.34
Childs Creek	30	356	0	0	NA	NA	0	0	0	0	0	0
Blair Creek	30	357	0	0	0	0	0	0	0	0	0	0
Merry Creek	30	358	0	0	0	NA	0	0	0	0	0	0
Corbett Creek	30	359	0	0	0	0	0	0	0	0	0	0
Mann Creek	30	360	0	0	0	0	0	0	0	0	0	0
Keeler Creek	31	361	2	1	1	0	1.41	0.70	2	(2-3)	1.41	0.67
West Fork St. Maries River	31	362	26	16	7	3	11.35	6.99	27	(26-31)	11.79	0.62
Cat Spur Creek	31	363	0	0	0	0	0	0	0	0	0	0
Cat Spur Creek	31	364	0	0	0	0	0	0	0	0	0	0
Kitten Creek	31	365	0	0	0	0	0	0	0	0	0	0
Middle Fork St. Maries River	32	334	0	0	0	NA	0	0	0	0	0	0
Middle Fork St. Maries River	32	349	0	0	0	0	0	0	0	0	0	0
Upper Trib. Of St. Maries River	32	354	0	0	0	0	0	0	0	0	0	0
White Rock Creek	32	375	0	0	0	0	0	0	0	0	0	0
Flewsie Creek	32	376	54	32	11	11	17.09	10.13	61	(53-74)	19.30	0.48
Three Bear Creek	57	379	46	24	14	8	15.97	8.33	54	(46-68)	18.75	0.46

Table A7. continued

Potlatch WA - Streams	Landscape Unit	HydroSite ID.	Total # Brook Trout	Electrofishing Pass # 1st	2nd	3rd	Brook Trout /100 m^2	Brook Trout 1st Pass /100 m^2	Population Estimate	95% C.I.	Population Estimate /100 m^2	Capture Probability
Chambers Creek	57	380	0	0	0	0	0	0	0	0	0	0
Long Meadow Creek	57	381	0	0	0	0	0	0	0	0	0	0
Oviatt Creek	57	382	21	18	2	1	8.90	7.63	21	(21-22)	8.90	0.84
McGary Creek	57	383	7	6	1	0	7.07	6.06	7	(7-8)	7.07	0.88
Bertha Creek	67	350	0	0	0	0	0	0	0	0	0	0
Bingo Creek	67	351	0	0	0	0	0	0	0	0	0	0
South Fork Beaver Creek	67	352	2	1	1	0	0.35	0.18	2	(2-3)	0.35	0.67
East Fork Beaver Creek	67	353	0	0	0	0	0	0	0	0	0	0
Harlan Creek	67	374	0	0	0	0	0	0	0	0	0	0

Table A8. Mean, minimum, and maximum length (mm) and weight (g) of brook trout sampled in 34 stream sites in 7 LMUs on PCOA,2000.

Potlatch WA - Streams	Landscape Unit	HydroSite ID.	Total # Brook Trout	Mean Length (mm)	Minimum Length	Maximum Length	Mean Weight (g)	Minimum Weight	Maximum Weight
Engstrom Creek	15	370	48	99.9	33	215	20.29	0.2	128
East Fork Mica Creek	15	371	3	131	84	169	29.33	6.3	50.7
Tributary of Mica Creek	15	372	3	150.67	116	169	48.33	21	64
Canyon Creek	23	366	0	0	0	0	0	0	0
Thorn Creek	23	367	0	0	0	0	0	0	0
South Fork Thorn Creek	23	368	0	0	0	0	0	0	0
Tributary to Thorn Creek	23	369	0	0	0	0	0	0	0
Jacot Creek	23	377	0	0	0	0	0	0	0
Olsen Creek	30	355	10	119.4	35	204	34.82	0.4	100
Childs Creek	30	356	0	0	0	0	0	0	0

Table A8. continued

Potlatch WA - Streams	Landscape Unit	HydroSite ID.	Total # Brook Trout	Mean Length (mm)	Minimum Length	Maximum Length	Mean Weight (g)	Minimum Weight	Maximum Weight
Blair Creek	30	357	0	0	0	0	0	0	0
Merry Creek	30	358	0	0	0	0	0	0	0
Corbett Creek	30	359	0	0	0	0	0	0	0
Mann Creek	30	360	0	0	0	0	0	0	0
Keeler Creek	31	361	2	57	57	57	2	2	2
West Fork St. Maries River	31	362	26	78.88	45	178	10.58	1	68
Cat Spur Creek	31	363	0	0	0	0	0	0	0
Cat Spur Creek	31	364	0	0	0	0	0	0	0
Kitten Creek	31	365	0	0	0	0	0	0	0
Middle Fork St. Maries River	32	334	0	0	0	0	0	0	0
Middle Fork St. Maries River	32	349	0	0	0	0	0	0	0
Upper Trib. Of St. Maries River	32	354	0	0	0	0	0	0	0
White Rock Creek	32	375	0	0	0	0	0	0	0
Flewsie Creek	32	376	54	94.61	24	222	21.79	0.1	178
Three Bear Creek	57	379	46	87.11	38	180	12.05	0.5	80
Chambers Creek	57	380	0	0	0	0	0	0	0
Long Meadow Creek	57	381	0	0	0	0	0	0	0
Oviatt Creek	57	382	21	151.05	59	205	42.96	2.2	86.3
McGary Creek	57	383	7	7.43	49	151	8.77	1.5	36.5
Bertha Creek	67	350	0	0	0	0	0	0	0
Bingo Creek	67	351	0	0	0	0	0	0	0
South Fork Beaver Creek	67	352	2	127.5	119	136	4.76	1.3	12.1
East Fork Beaver Creek	67	353	0	0	0	0	0	0	0
Harlan Creek	67	374	0	0	0	0	0	0	0

Table A9. The number, density, and population estimates of rainbow trout in 34 stream sites in 7 LMUs on PCOA, 2000.

Potlatch WA – Streams	Landscape Unit	HydroSite ID.	Total # Rainbow	Electrofishing Pass # 1st	2nd	3rd	Rainbow /100 m^2	Rainbow 1st Pass /100 m^2	Population Estimate	95% C.I.	Population Estimate /100 m^2	Capture Probability
Engstrom Creek	15	370	0	0	0	0	0	0	0	0	0	0
East Fork Mica Creek	15	371	0	0	0	0	0	0	0	0	0	0
Tributary of Mica Creek	15	372	0	0	0	0	0	0	0	0	0	0
Canyon Creek	23	366	0	0	0	0	0	0	0	0	0	0
Thorn Creek	23	367	0	0	0	0	0	0	0	0	0	0
South Fork Thorn Creek	23	368	0	0	0	0	0	0	0	0	0	0
Tributary to Thorn Creek	23	369	0	0	NA	NA	0	0	0	0	0	0
Jacot Creek	23	377	0	0	0	0	0	0	0	0	0	0
Olsen Creek	30	355	0	0	0	0	0	0	0	0	0	0
Childs Creek	30	356	0	0	NA	NA	0	0	0	0	0	0
Blair Creek	30	357	0	0	0	0	0	0	0	0	0	0
Merry Creek	30	358	0	0	0	NA	0	0	0	0	0	0
Corbett Creek	30	359	0	0	0	0	0	0	0	0	0	0
Mann Creek	30	360	0	0	0	0	0	0	0	0	0	0
Keeler Creek	31	361	0	0	0	0	0	0	0	0	0	0
West Fork St. Maries River	31	362	0	0	0	0	0	0	0	0	0	0
Cat Spur Creek	31	363	0	0	0	0	0	0	0	0	0	0
Cat Spur Creek	31	364	0	0	0	0	0	0	0	0	0	0
Kitten Creek	31	365	0	0	0	0	0	0	0	0	0	0
Middle Fork St. Maries River	32	334	0	0	0	NA	0	0	0	0	0	0
Middle Fork St. Maries River	32	349	0	0	0	0	0	0	0	0	0	0
Upper Trib. Of St. Maries River	32	354	0	0	0	0	0	0	0	0	0	0
White Rock Creek	32	375	0	0	0	0	0	0	0	0	0	0
Flewsie Creek	32	376	0	0	0	0	0	0	0	0	0	0
Three Bear Creek	57	379	61	39	15	7	21.18	13.54	64	(61-70)	22.22	0.62

Table A9. continued

Potlatch WA – Streams	Landscape Unit	HydroSite ID.	Total # Rainbow	Electrofishing Pass # 1st	2nd	3rd	Rainbow /100 m^2	Rainbow 1st Pass /100 m^2	Population Estimate	95% C.I.	Population Estimate /100 m^2	Capture Probability
Chambers Creek	57	380	15	9	4	2	7.89	4.74	15	(15-18)	7.89	0.65
Long Meadow Creek	57	381	114	87	22	5	13.97	10.66	115	(114-118)	14.09	0.77
Oviatt Creek	57	382	0	0	0	0	0	0	0	0	0	0
McGary Creek	57	383	0	0	0	0	0	0	0	0	0	0
Bertha Creek	67	350	0	0	0	0	0	0	0	0	0	0
Bingo Creek	67	351	0	0	0	0	0	0	0	0	0	0
South Fork Beaver Creek	67	352	0	0	0	0	0	0	0	0	0	0
East Fork Beaver Creek	67	353	0	0	0	0	0	0	0	0	0	0
Harlan Creek	67	374	0	0	0	0	0	0	0	0	0	0

Table A10. Mean, minimum, and maximum length (mm) and weight (g) of rainbow trout sampled in 34 stream sites in 7 LMUs on PCOA, 2000.

Potlatch WA - Streams	Landscape Unit	HydroSite ID.	Total # Rainbow	Mean Length (mm)	Minimum Length	Maximum Length	Mean Weight (g)	Minimum Weight	Maximum Weight
Engstrom Creek	15	370	0	0	0	0	0	0	0
East Fork Mica Creek	15	371	0	0	0	0	0	0	0
Tributary of Mica Creek	15	372	0	0	0	0	0	0	0
Canyon Creek	23	366	0	0	0	0	0	0	0
Thorn Creek	23	367	0	0	0	0	0	0	0
South Fork Thorn Creek	23	368	0	0	0	0	0	0	0
Tributary to Thorn Creek	23	369	0	0	0	0	0	0	0
Jacot Creek	23	377	0	0	0	0	0	0	0
Olsen Creek	30	355	0	0	0	0	0	0	0
Childs Creek	30	356	0	0	0	0	0	0	0

Table A10. continued

Potlatch WA - Streams	Landscape Unit	HydroSite ID.	Total # Rainbow	Mean Length (mm)	Minimum Length	Maximum Length	Mean Weight (g)	Minimum Weight	Maximum Weight
Blair Creek	30	357	0	0	0	0	0	0	0
Merry Creek	30	358	0	0	0	0	0	0	0
Corbett Creek	30	359	0	0	0	0	0	0	0
Mann Creek	30	360	0	0	0	0	0	0	0
Keeler Creek	31	361	0	0	0	0	0	0	0
West Fork St. Maries River	31	362	0	0	0	0	0	0	0
Cat Spur Creek	31	363	0	0	0	0	0	0	0
Cat Spur Creek	31	364	0	0	0	0	0	0	0
Kitten Creek	31	365	0	0	0	0	0	0	0
Middle Fork St. Maries River	32	334	0	0	0	0	0	0	0
Middle Fork St. Maries River	32	349	0	0	0	0	0	0	0
Upper Trib. Of St. Maries River	32	354	0	0	0	0	0	0	0
White Rock Creek	32	375	0	0	0	0	0	0	0
Flewsie Creek	32	376	0	0	0	0	0	0	0
Three Bear Creek	57	379	61	74.09	28	137	6.95	0.1	28
Chambers Creek	57	380	15	107.8	82	132	15.76	5.7	30.7
Long Meadow Creek	57	381	114	95.16	32	198	14.81	0.2	85.5
Oviatt Creek	57	382	0	0	0	0	0	0	0
McGary Creek	57	383	0	0	0	0	0	0	0
Bertha Creek	67	350	0	0	0	0	0	0	0
Bingo Creek	67	351	0	0	0	0	0	0	0
South Fork Beaver Creek	67	352	0	0	0	0	0	0	0
East Fork Beaver Creek	67	353	0	0	0	0	0	0	0
Harlan Creek	67	374	0	0	0	0	0	0	0

Table A11. The number, density, and population estimates of sculpin (all species combined) in 34 stream sites in 7 LMUs on PCOA, 2000.

Potlatch WA - Streams	Landscape Unit	HydroSite ID.	Total # Sculpin (sp)	Electrofishing Pass # 1st	2nd	3rd	Sculpin (sp) /100 m^2	Sculpin(sp) 1st Pass /100 m^2	Population Estimate	95% C.I.	Population Estimate /100 m^2	Capture Probability
Engstrom Creek	15	370	252	130	81	41	107.23	55.32	307	(270-344)	130.64	0.43
East Fork Mica Creek	15	371	86	45	33	8	56.58	29.61	96	(86-109)	63.16	0.52
Tributary of Mica Creek	15	372	99	43	34	22	46.05	20	146	(99-200)	67.91	0.31
Canyon Creek	23	366	137	55	51	31	51.89	20.83	226	(137-320)	85.61	0.26
Thorn Creek	23	367	121	52	41	28	52.16	22.41	187	(121-258)	80.60	0.29
South Fork Thorn Creek	23	368	22	14	6	2	17.74	11.29	22	(22-25)	17.74	0.69
Tributary to Thorn Creek	23	369	0	0	0	0	0	0	0	0	0	0
Jacot Creek	23	377	0	0	0	0	0	0	0	0	0	0
Olsen Creek	30	355	151	72	56	23	31.72	15.13	188	((155-221)	39.50	0.41
Childs Creek	30	356	50	50	NA	NA	8.74	8.74	NA	NA	NA	NA
Blair Creek	30	357	91	36	30	25	32.27	12.77	169	(91-276)	59.93	0.22
Merry Creek	30	358	291	236	155	NA	19.41	15.74	663	(43-853)	44.23	0.36
Corbett Creek	30	359	138	62	34	42	40.23	18.08	250	(138-375)	72.89	0.23
Mann Creek	30	360	80	25	30	25	39.22	12.25	230	(80-497)	112.75	0.13
Keeler Creek	31	361	44	26	10	8	30.99	18.31	49	(44-58)	34.51	0.52
West Fork St. Maries River	31	362	95	44	42	29	41.48	19.21	214	(115-336)	93.45	0.22
Cat Spur Creek	31	363	273	210	106	60	119.21	91.70	438	(403-473)	191.27	0.48
Cat Spur Creek	31	364	210	100	66	44	121.39	57.80	288	(228-348)	166.47	0.35
Kitten Creek	31	365	92	45	24	23	57.5	28.13	128	(92-170)	80	0.34
Middle Fork St. Maries River	32	334	475	270	205	NA	33.86	19.24	1042	(597-1487)	74.27	0.26
Middle Fork St. Maries River	32	349	190	95	55	40	60.90	30.45	250	(202-298)	80.13	0.38
Upper Trib. Of St. Maries River	32	354	146	61	50	35	102.82	42.96	240	(146-336)	169.01	0.27
White Rock Creek	32	375	150	75	51	24	56.82	28.41	184	(154-214)	69.70	0.43
Flewsie Creek	32	376	198	90	53	55	62.66	28.48	334	(212-456)	105.70	0.26
Three Bear Creek	57	379	0	0	0	0	0	0	0	0	0	0

Table A11. continued

Potlatch WA - Streams	Landscape Unit	HydroSite ID.	Total # Sculpin (sp)	Electrofishing Pass # 1st	2nd	3rd	Sculpin (sp) /100 m^2	Sculpin(sp) 1st Pass /100 m^2	Population Estimate	95% C.I.	Population Estimate /100 m^2	Capture Probability
Chambers Creek	57	380	0	0	0	0	0	0	0	0	0	0
Long Meadow Creek	57	381	35	11	14	10	4.29	1.35	67	(35-133)	8.21	0.21
Oviatt Creek	57	382	0	0	0	0	0	0	0	0	0	0
McGary Creek	57	383	0	0	0	0	0	0	0	0	0	0
Bertha Creek	67	350	96	44	32	20	14.46	6.63	132	(96-173)	19.88	0.35
Bingo Creek	67	351	0	0	0	0	0	0	0	0	0	0
South Fork Beaver Creek	67	352	38	19	10	9	6.70	3.35	48	(38,66)	8.47	0.4
East Fork Beaver Creek	67	353	127	44	48	35	13.79	4.78	305	(127-553)	33.12	0.16
Harlan Creek	67	374	9	7	0	2	6.52	5.07	9	(9-11)	6.52	0.69

Table A12. Mean, minimum, and maximum length (mm) and weight (g) of sculpin (all species combined) sampled in 34 stream sites in 7 LMUs on PCOA, 2000.

Potlatch WA - Streams	Landscape Unit	HydroSite ID.	Total # Sculpin (sp)	Mean Length (mm)	Minimum Length	Maximum Length	Mean Weight (g)	Minimum Weight	Maximum Weight
Engstrom Creek	15	370	252	70.55	29	102	4.55	0.3	13
East Fork Mica Creek	15	371	86	65.65	32	99	3.37	0.2	11.7
Tributary of Mica Creek	15	372	99	64.55	28	92	3.26	0.2	9
Canyon Creek	23	366	137	74.85	54	98	5.2	1	10
Thorn Creek	23	367	121	70.3	50	113	6.45	2	21
South Fork Thorn Creek	23	368	22	65.5	27	94	4.07	0.1	10
Tributary to Thorn Creek	23	369	0	0	0	0	0	0	0
Jacot Creek	23	377	0	0	0	0	0	0	0
Olsen Creek	30	355	151	75	31	101	5.71	0.4	11.6

Table A12. continued

Potlatch WA - Streams	Landscape Unit	HydroSite ID.	Total # Sculpin (sp)	Mean Length (mm)	Minimum Length	Maximum Length	Mean Weight (g)	Minimum Weight	Maximum Weight
Childs Creek	30	356	50	74.85	49	103	5.95	1	18
Blair Creek	30	357	91	68.95	51	91	NA	NA	NA
Merry Creek	30	358	291	65.7	23	110	4.95	0.1	15.4
Corbett Creek	30	359	138	66.8	32	91	3.95	1	10
Mann Creek	30	360	80	79.95	49	114	6.3	1	18
Keeler Creek	31	361	44	53.45	43	85	2.5	1	9
West Fork St. Maries River	31	362	95	62.95	43	106	4.1	1	16
Cat Spur Creek	31	363	273	78.5	58	98	7.6	3	17
Cat Spur Creek	31	364	210	68.7	45	94	2.7	1	6
Kitten Creek	31	365	92	65.65	35	90	3.1	1	6
Middle Fork St. Maries River	32	334	475	89.93	35	140	15.65	1	49.5
Middle Fork St. Maries River	32	349	190	64.5	28	95	3.33	0.2	11
Upper Trib. Of St. Maries River	32	354	146	74.65	50	96	7.15	1	16
White Rock Creek	32	375	150	64.86	34	91	3.42	0.4	9
Flewsie Creek	32	376	198	60.57	28	141	6.25	0.2	53
Three Bear Creek	57	379	0	0	0	0	0	0	0
Chambers Creek	57	380	0	0	0	0	0	0	0
Long Meadow Creek	57	381	35	68.95	50	87	4.27	1.3	7
Oviatt Creek	57	382	0	0	0	0	0	0	0
McGary Creek	57	383	0	0	0	0	0	0	0
Bertha Creek	67	350	96	78.19	39	101	5.45	0.6	10.3
Bingo Creek	67	351	0	0	0	0	0	0	0
South Fork Beaver Creek	67	352	38	69.5	46	99	4.76	1.3	12.1
East Fork Beaver Creek	67	353	127	86.9	35	116	9.84	0.5	19.5
Harlan Creek	67	374	9	103	21	145	16.48	0.2	38.2

Table A13. Total numbers of speckled dace, long-nosed dace, mountain whitefish, and red-sided shiner in 34 stream sites in 7 LMUs on PCOA, 2000.

Potlatch WA - Streams	Landscape Unit	HydroSite ID	Total # Speckled Dace	Total # Long-nosed Dace	Total # Mountain Whitefish	Total # Red-sided Shiner
Engstrom Creek	15	370	0	0	0	0
East Fork Mica Creek	15	371	0	0	0	0
Tributary of Mica Creek	15	372	0	0	0	0
Canyon Creek	23	366	0	0	0	0
Thorn Creek	23	367	0	0	0	0
South Fork Thorn Creek	23	368	0	0	0	0
Tributary to Thorn Creek	23	369	0	0	0	0
Jacot Creek	23	377	0	0	0	0
Olsen Creek	30	355	0	0	0	0
Childs Creek	30	356	0	0	0	0
Blair Creek	30	357	0	0	0	0
Merry Creek	30	358	0	0	0	0
Corbett Creek	30	359	0	0	0	0
Mann Creek	30	360	0	0	0	0
Keeler Creek	31	361	0	0	0	0
West Fork St. Maries River	31	362	2	0	0	0
Cat Spur Creek	31	363	0	0	0	0
Cat Spur Creek	31	364	0	0	0	0
Kitten Creek	31	365	0	0	0	0
Middle Fork St. Maries River	32	334	0	9	5	1
Middle Fork St. Maries River	32	349	0	0	0	0
Upper Trib. Of St. Maries River	32	354	0	0	0	0
White Rock Creek	32	375	0	0	0	0
Flewsie Creek	32	376	0	0	0	0
Three Bear Creek	57	379	0	0	0	0
Chambers Creek	57	380	0	0	0	0

Table A13. continued

Potlatch WA - Streams	Landscape Unit	HydroSite ID	Total # Speckled Dace	Total # Long-nosed Dace	Total # Mountain Whitefish	Total # Red-sided Shiner
Long Meadow Creek	57	381	35	0	0	0
Oviatt Creek	57	382	0	0	0	0
McGary Creek	57	383	0	0	0	0
Bertha Creek	67	350	0	0	0	0
Bingo Creek	67	351	0	0	0	0
South Fork Beaver Creek	67	352	0	0	0	0
East Fork Beaver Creek	67	353	0	0	0	0
Harlan Creek	67	374	0	0	0	0

Table A14. The number, density, and population estimates of tailed frog tadpoles in 34 stream sites in 7 LMUs on PCOA, 2000.

Potlatch WA - Streams	Landscape Unit	HydroSite ID.	Total # Tailed Frog Tadpoles	Electrofishing Pass # 1st	2nd	3rd	Tadpoles /100 m^2	Tadpoles 1st Pass /100 m^2	Population Estimate	95% C.I.	Population Estimate /100 m^2	Capture Probability
Engstrom Creek	15	370	370	168	105	97	157.45	71.49	613	(455-771)	260.85	0.26
East Fork Mica Creek	15	371	238	76	75	87	156.58	50.00	1620	(238-4120)	1065.79	0.05
Tributary of Mica Creek	15	372	146	59	51	36	67.91	27.44	255	(146-371)	118.60	0.24
Canyon Creek	23	366	0	0	0	0	0	0	0	0	0	0
Thorn Creek	23	367	0	0	0	0	0	0	0	0	0	0
South Fork Thorn Creek	23	368	0	0	0	0	0	0	0	0	0	0
Tributary to Thorn Creek	23	369	0	0	0	0	0	0	0	0	0	0
Jacot Creek	23	377	0	0	0	0	0	0	0	0	0	0
Olsen Creek	30	355	421	185	153	83	88.45	38.87	615	(506-724)	129.20	0.32
Childs Creek	30	356	242	242	NA	NA	42.31	42.31	NA	NA	NA	NA
Blair Creek	30	357	42	16	18	8	14.89	5.67	59	(42-89)	20.92	0.33
Merry Creek	30	358	1	1	NA	NA	0.07	0.07	NA	NA	NA	NA

Table A14. continued

Potlatch WA - Streams	Landscape Unit	HydroSite ID.	Total # Tailed Frog Tadpoles	Electrofishing Pass # 1st	2nd	3rd	Tadpoles /100 m^2	Tadpoles 1st Pass /100 m^2	Population Estimate	95% C.I.	Population Estimate /100 m^2	Capture Probability
Corbett Creek	30	359	0	0	0	0	0	0	0	0	0	0
Mann Creek	30	360	33	2	15	16	16.18	0.98	181	(33-507)	88.73	0.06
Keeler Creek	31	361	0	0	0	0	0	0	0	0	0	0
West Fork St. Maries River	31	362	0	0	0	0	0	0	0	0	0	0
Cat Spur Creek	31	363	760	280	318	162	331.88	122.27	1462	(1100-1824)	638.43	0.22
Cat Spur Creek	31	364	404	225	105	74	233.53	130.06	483	(441-525)	279.19	0.45
Kitten Creek	31	365	106	51	34	21	66.25	31.88	139	(106-174)	86.88	0.38
Middle Fork St. Maries River	32	334	618	321	297	NA	44.05	22.88	2729	(618-5280)	194.51	0.12
Middle Fork St. Maries River	32	349	112	51	41	20	35.90	16.35	148	(118-185)	47.44	0.37
Upper Trib. Of St. Maries River	32	354	100	50	16	34	70.42	35.21	1.67	(100-250)	1.18	0.26
White Rock Creek	32	375	162	63	49	50	61.36	23.86	391	(162-680)	148.11	0.16
Flewsie Creek	32	376	2	0	2	0	0.63	0	NA	NA	NA	NA
Three Bear Creek	57	379	0	0	0	0	0	0	0	0	0	0
Chambers Creek	57	380	0	0	0	0	0	0	0	0	0	0
Long Meadow Creek	57	381	0	0	0	0	0	0	0	0	0	0
Oviatt Creek	57	382	0	0	0	0	0	0	0	0	0	0
McGary Creek	57	383	0	0	0	0	0	0	0	0	0	0
Bertha Creek	67	350	77	25	27	25	11.60	3.77	218	(77-471)	32.83	0.13
Bingo Creek	67	351	61	28	21	12	25.85	11.86	80	(61-107)	33.90	0.37
South Fork Beaver Creek	67	352	27	16	7	4	4.76	2.82	29	(27-35)	5.11	0.56
East Fork Beaver Creek	67	353	920	259	365	296	99.89	28.12	15494	(920-23504)	1682.30	0.02
Harlan Creek	67	374	4	16	12	13	2.90	11.59	74	(41-137)	53.62	0.23

Table A15. The number, density, and population estimates of tailed frog adults in 34 stream sites in 7 LMUs on PCOA, 2000.

Potlatch WA – Streams	Landscape Unit	HydroSite ID.	Total # Tailed Frog Adults	Electrofishing Pass # 1st	2nd	3rd	Tailed Frog /100 m^2	Tailed Frog 1st Pass /100 m^2	Population Estimate	95% C.I.	Population Estimate /100 m^2	Capture Probability
Engstrom Creek	15	370	7	5	0	2	2.98	2.13	7	(7-9)	2.98	0.64
East Fork Mica Creek	15	371	31	22	6	3	20.39	14.47	31	(31-34)	20.39	0.72
Tributary of Mica Creek	15	372	20	10	7	3	9.30	4.65	22	(20-29)	10.23	0.51
Canyon Creek	23	366	0	0	0	0	0	0	0	0	0	0
Thorn Creek	23	367	0	0	0	0	0	0	0	0	0	0
South Fork Thorn Creek	23	368	0	0	0	0	0	0	0	0	0	0
Tributary to Thorn Creek	23	369	0	0	0	0	0	0	0	0	0	0
Jacot Creek	23	377	0	0	0	0	0	0	0	0	0	0
Olsen Creek	30	355	0	0	0	0	0	0	0	0	0	0
Childs Creek	30	356	0	0	0	0	0	0	0	0	0	0
Blair Creek	30	357	1	0	1	0	0.35	0	NA	NA	NA	NA
Merry Creek	30	358	0	0	0	0	0	0	0	0	0	0
Corbett Creek	30	359	2	1	0	1	0.58	0.29	2	(2-4)	0.58	0.5
Mann Creek	30	360	1	0	1	0	0.49	0	NA	NA	NA	NA
Keeler Creek	31	361	0	0	0	0	0	0	0	0	0	0
West Fork St. Maries River	31	362	0	0	0	0	0	0	0	0	0	0
Cat Spur Creek	31	363	0	0	0	0	0	0	0	0	0	0
Cat Spur Creek	31	364	2	2	0	0	1.16	1.16	NA	NA	NA	NA
Kitten Creek	31	365	7	3	0	4	4.38	1.88	9	(7-18)	5.63	0.33
Middle Fork St. Maries River	32	334	1	1	0	NA	0.07	0.07	NA	NA	NA	NA
Middle Fork St. Maries River	32	349	11	6	3	2	3.53	1.92	11	(11-14)	3.53	0.61
Upper Trib. Of St. Maries River	32	354	18	5	9	4	12.68	3.52	27	(18-51)	19.01	0.29
White Rock Creek	32	375	41	18	15	8	15.53	6.82	53	(41-74)	20.08	0.38
Flewsie Creek	32	376	0	0	0	0	0	0	0	0	0	0
Three Bear Creek	57	379	0	0	0	0	0	0	0	0	0	0

Table A15. continued

Potlatch WA – Streams	Landscape Unit	HydroSite ID.	Total # Tailed Frog Adults	Electrofishing Pass # 1st	2nd	3rd	Tailed Frog /100 m²	Tailed Frog 1st Pass /100 m²	Population Estimate	95% C.I.	Population Estimate /100 m²	Capture Probability
Chambers Creek	57	380	0	0	0	0	0	0	0	0	0	0
Long Meadow Creek	57	381	0	0	0	0	0	0	0	0	0	0
Oviatt Creek	57	382	0	0	0	0	0	0	0	0	0	0
McGary Creek	57	383	0	0	0	0	0	0	0	0	0	0
Bertha Creek	67	350	23	11	10	2	3.46	1.66	25	(23-31)	3.77	0.53
Bingo Creek	67	351	3	1	1	1	1.27	0.42	3	(3-6)	1.27	0.5
South Fork Beaver Creek	67	352	1	0	1	0	0.18	0	NA	NA	NA	NA
East Fork Beaver Creek	67	353	3	0	0	3	0.33	0	NA	NA	NA	NA
Harlan Creek	67	374	0	0	0	0	0.00	0	0	0	0	0

Table A16. The number, density, and population estimates of Idaho giant salamander in 34 stream sites in 7 LMUs on PCOA, 2000.

Potlatch WA – Streams	Landscape Unit	HydroSite ID.	Total # Idaho Giant Salamander	Electrofishing Pass # 1st	2nd	3rd	Salamanders /100 m²	Salamanders 1st Pass /100 m²	Population Estimate	95% C.I.	Population Estimate /100 m²	Capture Probability
Engstrom Creek	15	370	3	1	0	2	1.28	0.43	3	(3-6)	1.28	0.43
East Fork Mica Creek	15	371	3	2	1	0	1.97	1.32	3	(3-4)	1.97	0.75
Tributary of Mica Creek	15	372	0	0	0	0	0	0	0	0	0	0
Canyon Creek	23	366	0	0	0	0	0	0	0	0	0	0
Thorn Creek	23	367	0	0	0	0	0	0	0	0	0	0
South Fork Thorn Creek	23	368	5	0	4	1	4.03	0	6	(5-13)	4.84	0.36
Tributary to Thorn Creek	23	369	0	0	0	0	0	0	0	0	0	0
Jacot Creek	23	377	0	0	0	0	0	0	0	0	0	0
Olsen Creek	30	355	0	0	0	0	0	0	0	0	0	0

Table A16. continued

Potlatch WA – Streams	Landscape Unit	HydroSite ID.	Total # Idaho Giant Salamander	Electrofishing Pass # 1st	2nd	3rd	Salamanders /100 m^2	Salamanders 1st Pass /100 m^2	Population Estimate	95% C.I.	Population Estimate /100 m^2	Capture Probability
Childs Creek	30	356	0	0	0	0	0	0	0	0	0	0
Blair Creek	30	357	0	0	0	0	0	0	0	0	0	0
Merry Creek	30	358	0	0	0	0	0	0	0	0	0	0
Corbett Creek	30	359	0	0	0	0	0	0	0	0	0	0
Mann Creek	30	360	0	0	0	0	0	0	0	0	0	0
Keeler Creek	31	361	0	0	0	0	0	0	0	0	0	0
West Fork St. Maries River	31	362	0	0	0	0	0	0	0	0	0	0
Cat Spur Creek	31	363	0	0	0	0	0	0	0	0	0	0
Cat Spur Creek	31	364	0	0	0	0	0	0	0	0	0	0
Kitten Creek	31	365	1	0	0	1	0.63	0	NA	NA	NA	NA
Middle Fork St. Maries River	32	334	0	0	0	0	0	0	0	0	0	0
Middle Fork St. Maries River	32	349	0	0	0	0	0	0	0	0	0	0
Upper Trib. Of St. Maries River	32	354	0	0	0	0	0	0	0	0	0	0
White Rock Creek	32	375	4	2	1	1	1.52	0.76	4	(4-6)	1.52	0.57
Flewsie Creek	32	376	4	1	2	1	1.27	0.32	4	(4-7)	1.27	0.5
Three Bear Creek	57	379	0	0	0	0	0	0	0	0	0	0
Chambers Creek	57	380	0	0	0	0	0	0	0	0	0	0
Long Meadow Creek	57	381	0	0	0	0	0	0	0	0	0	0
Oviatt Creek	57	382	0	0	0	0	0	0	0	0	0	0
McGary Creek	57	383	0	0	0	0	0	0	0	0	0	0
Bertha Creek	67	350	7	2	5	0	1.05	0.30	7	(7-10)	1.05	0.58
Bingo Creek	67	351	0	0	0	0	0	0	0	0	0	0
South Fork Beaver Creek	67	352	0	0	0	0	0	0	0	0	0	0
East Fork Beaver Creek	67	353	0	0	0	0	0	0	0	0	0	0
Harlan Creek	67	374	0	0	0	0	0	0	0	0	0	0

Table A17. The percentage (%) and mean density (100 m^2) of stream sites with westslope cutthroat, brook, and rainbow trout in 7 LMUs on PCOA, 2000.

PCOA – Landscape #	# of HydroSites	# (%) of sites w/ Cutthroat	# (%) of sites w/ Brook	# (%) of sites w/ Rainbow	Mean Density Cutthroat /100 m^2	Mean Density Brook /100 m^2	Mean Density Rainbow /100 m^2	Total Site Area /100 m^2	Mean Site Area /100 m^2
Mica Creek - #15	3	3 (100%)	3 (100%)	0 (0%)	21.26	8.97	NA	6.02	2.01
Thorn Creek - #23	5	5 (100%)	0 (0%)	0 (0%)	26.5	NA	NA	8.83	1.77
Blair Creek - #30	6	6 (100%)	1 (17%)	0 (0%)	4.12	0.29	NA	33.76	5.63
West Fork St. Maries - #31	5	5 (100%)	2 (40%)	0 (0%)	10.93	3	NA	9.33	1.87
Middle Fork St. Maries - #32	5	5 (100%)	1 (20%)	0 (0%)	10.26	2.22	NA	24.37	4.87
Long Meadow Creek - #57	5	2 (40%)	3 (60%)	3 (60%)	1.53	4.54	11.66	16.29	3.26
Upper Beaver Creek - #67.	5	5 (100%)	1 (20%)	0 (0%)	18.37	0.08	NA	25.26	5.05

Table A18. Mean density of different length classifications, and mean biomass (g) of westslope cutthroat, brook, and rainbow trout in 7 LMUs on PCOA 2000.

PCOA – Landscape #	# of HydroSites	Mean Cutthroat < 90 mm /100 m^2	Mean Cutthroat > 150 mm /100 m^2	Mean g/100 m2 Cutthroat	Mean Brook < 90 mm /100 m^2	Mean Brook > 150 mm /100 m^2	Mean g/100 m2 Brook	Mean Rainbow < 90 mm /100 m^2	Mean Rainbow > 150 mm /100 m^2	Mean g/100 m2 Rainbow
Mica Creek - #15	3	17.6	1.3	193.7	3.5	1.7	200.7	NA	NA	NA
Thorn Creek - #23	5	15.6	1.9	325.3	NA	NA	NA	NA	NA	NA
Blair Creek - #30	6	1.5	0.7	85.2	0.09	0.1	10.3	NA	NA	NA
West Fork St. Maries - #31	5	4.4	1.3	204.3	2.6	0.2	29.8	NA	NA	NA
Middle Fork St. Maries - #32	5	5.4	1	210.7	1	0.5	48.5	NA	NA	NA
Long Meadow Creek - #57	5	1.2	0.1	15.8	1.9	1.04	88.1	5.3	0.4	144.9
Upper Beaver Creek - #67.	5	10.3	0.3	153.9	0	0	0.7	NA	NA	NA

Table A19. Stream characteristics and electrofishing data for 20 transects on the West Fork St. Maries River, 2000.

Potlatch Stream Site	Transect ID# (km)	Transect Length (m)	Survey Date	Water Temp (°C)	Conductivity (ms)	Latitude	Longitude	Total Electrofishing Time (s)	Electrofishing Time (s) 1st Pass	Electrofishing Time (s) 2nd Pass
WF St. Maries River	0.0-0.1	100	8/20/00	12	40	465715	1161800	2948	1415	1533
WF St. Maries River	0.1-0.2	100	8/20/00	13	50	465714	1161807	3183	1748	1435
WF St. Maries River	0.2-0.3	100	8/21/00	11.5	40	465712	161811	2578	1406	1172
WF St. Maries River	0.3-0.4	100	8/21/00	14	40	465713	1161813	2479	1412	1067
WF St. Maries River	0.4-0.5	100	8/22/00	12	40	465714	1161816	2731	1489	1242
WF St. Maries River	0.5-0.6	100	8/22/00	14	40	465716	1161819	2571	1351	1220
WF St. Maries River	0.6-0.7	100	8/23/00	12	30	465716	1161819	2213	1359	854
WF St. Maries River	0.7-0.8	100	8/30/00	14	50	465720	1161827	2818	1605	1213
WF St. Maries River	0.8-0.9	100	8/31/00	12.5	40	465721	1161829	2743	1748	995
WF St. Maries River	0.9-1.0	100	8/31/00	14	40	465722	1161832	2890	1757	1133
WF St. Maries River	1.0-1.045	45	9/2/00	12	60	465721	1161833	1348	799	549
WF St. Maries River	1.045-1.145	100	9/7/00	11.5	40	465721	1161836	3337	1845	1492
WF St. Maries River	1.145-1.245	100	9/8/00	NA	NA	465723	1161833	4186	2035	2151
WF St. Maries River	1.245-1.345	100	9/8/00	9.5	50	465717	1161842	3405	1414	1991
WF St. Maries River	1.345-1.372	27	9/9/00	8.5	50	465716	1161845	1512	727	785
WF St. Maries River	1.372-1.472	100	9/9/00	8.5	50	NA	NA	2565	1194	1371
WF St. Maries River	1.472-1.572	100	10/26/00	3.5	NA	465715	1161848	1233	1233	0
WF St. Maries River	1.572-1.672	100	10/26/00	3.5	NA	465714	1161851	1948	1948	0
Hidden Creek	Mouth-up 65m	65	9/1/00	11.5	40	465722	1161831	1777	920	857
Hidden Creek	Bridge-.1km	100	9/1/00	12	40	465723	1161833	2833	1593	1240

Table A20. Total number and number per pass of brook trout, westslope cutthroat trout, and sculpin species in 20 transects sampled in the West Fork St. Maries River, 2000.

Potlatch Stream Site	Transect ID# (km)	Total Brook Trout	Brook Trout 1st Pass	Brook Trout 2nd Pass	Total Cutthroat Trout	Cutthroat Trout 1st Pass	Cutthroat Trout 2nd Pass	Total Sculpin *sp.*	Sculpin *sp.* 1st Pass	Sculpin *sp.* 2nd Pass
WF St. Maries River	0.0-0.1	7	4	3	7	7	0	45	31	14
WF St. Maries River	0.1-0.2	14	8	6	9	1	8	67	43	24
WF St. Maries River	0.2-0.3	15	11	4	10	5	5	43	30	13
WF St. Maries River	0.3-0.4	15	11	4	12	3	9	38	27	11
WF St. Maries River	0.4-0.5	23	16	7	7	5	2	55	29	26
WF St. Maries River	0.5-0.6	12	11	1	3	1	2	55	21	34
WF St. Maries River	0.6-0.7	21	16	5	11	8	3	35	35	0
WF St. Maries River	0.7-0.8	12	6	6	5	4	1	73	50	23
WF St. Maries River	0.8-0.9	22	18	4	6	5	1	154	98	55
WF St. Maries River	0.9-1.0	28	24	4	10	5	5	169	102	67
WF St. Maries River	1.0-1.045	4	4	0	12	6	6	75	42	33
WF St. Maries River	1.045-1.145	22	16	6	24	17	7	99	56	43
WF St. Maries River	1.145-1.245	13	10	3	28	24	4	112	66	46
WF St. Maries River	1.245-1.345	13	11	2	36	24	12	76	39	37
WF St. Maries River	1.345-1.372	1	1	0	10	5	5	64	36	28
WF St. Maries River	1.372-1.472	17	14	3	4	3	1	42	23	19
WF St. Maries River	1.472-1.572	24	24	0	3	3	0	29	29	0
WF St. Maries River	1.572-1.672	12	12	0	2	2	0	42	42	0
Hidden Creek	mouth-up 65m	4	4	0	1	1	0	76	43	33
Hidden Creek	bridge-.1km	5	5	0	3	1	2	47	32	15

Table A21. Total number and number per pass of speckled dace, red-sided shiner, Idaho giant salamander, and Columbia spotted frog in 20 transects on the West Fork St. Maries River, 2000.

Potlatch Stream Site	Transect ID (km)	Total Speckled Dace	Speckled Dace 1st Pass	Speckled Dace 2nd Pass	Total Red-sided Shiner	Red-sided Shiner 1st Pass	Red-sided Shiner 2nd Pass	Total ID. Giant Salamander	ID. Giant Salamander 1st Pass	ID. Giant Salamander 2nd Pass	Total Spotted Frog	Spotted Frog 1st Pass	Spotted Frog 2nd Pass
WF St. Maries River	0.0-0.1	7	4	3	36	22	14	0	0	0	0	0	0
WF St. Maries River	0.1-0.2	4	2	2	2	2	0	0	0	0	0	0	0
WF St. Maries River	0.2-0.3	7	5	2	2	0	2	0	0	0	0	0	0
WF St. Maries River	0.3-0.4	11	9	2	0	0	0	0	0	0	0	0	0
WF St. Maries River	0.4-0.5	4	3	1	3	3	0	0	0	0	2	1	1
WF St. Maries River	0.5-0.6	5	5	0	19	14	5	0	0	0	0	0	0
WF St. Maries River	0.6-0.7	0	0	0	2	2	0	0	0	0	0	0	0
WF St. Maries River	0.7-0.8	6	2	4	132	104	28	0	0	0	1	1	0
WF St. Maries River	0.8-0.9	0	0	0	14	6	8	1	1	1	4	4	0
WF St. Maries River	0.9-1.0	1	0	1	0	0	0	0	0	0	1	1	0
WF St. Maries River	1.0-1.045	0	0	0	0	0	0	0	0	0	0	0	0
WF St. Maries River	1.045-1.145	9	6	3	0	0	0	0	0	0	0	0	0
WF St. Maries River	1.145-1.245	0	0	0	1	0	1	1	1	0	0	0	0
WF St. Maries River	1.245-1.345	0	0	0	0	0	0	0	0	0	0	0	0
WF St. Maries River	1.345-1.372	0	0	0	0	0	0	0	0	0	0	0	0
WF St. Maries River	1.372-1.472	1	1	0	0	0	0	0	1	0	0	0	0
WF St. Maries River	1.472-1.572	0	0	0	0	0	0	0	0	0	0	0	0
WF St. Maries River	1.572-1.672	0	0	0	0	0	0	0	0	0	0	0	0
Hidden Creek	mouth-up 65m	0	0	0	0	0	0	0	0	0	1	1	0
Hidden Creek	bridge-.1km	0	0	0	0	0	0	1	1	0	0	0	0

Table A22. Stream characteristics and electrofishing data for 46 transects on Keeler Creek, 2000.

Potlatch Stream Site	Transect ID# (km)	Transect Length (m)	Survey Date	Water Temp (°C)	Conductivity (ms)	Latitude	Longitude	Total Electrofishing Time (s)	Electrofishing Time (s) 1st Pass	Electrofishing Time (s) 2nd Pass
Keeler Creek	0.0-0.1	100	9/13/00	14	40	NA	NA	3141	1806	1335
Keeler Creek	0.1-0.2	100	9/14/00	13	40	465712	1161844	2819	1369	1450
Keeler Creek	0.2-0.3	100	9/14/00	13	40	NA	NA	2585	1147	1438
Keeler Creek	0.3-0.344	44	9/14/00	14	40	465707	1161845	1457	646	811
Keeler Creek	0.344-0.444	100	9/15/00	10.5	40	465705	1161847	3090	1587	1503
Keeler Creek	0.444-0.544	100	9/15/00	11.5	40	465703	1161849	2597	1710	887
Keeler Creek	0.544-0.644	100	9/16/00	12	40	465702	1161850	3198	1591	1607
Keeler Creek	0.644-0.744	100	9/16/00	13.5	40	465700	1161849	2238	1169	1069
Keeler Creek	0.744-0.844	100	9/18/00	12	40	465658	1161846	3967	2717	1250
Keeler Creek	0.844-0.944	100	9/18/00	11.5	40	465654	1161845	3820	1792	2028
Keeler Creek	0.944-1.044	100	9/19/00	12	40	465652	1161843	3522	1940	1582
Keeler Creek	1.044-1.144	100	9/19/00	12	40	465650	1161843	2811	1621	1190
Keeler Creek	1.144-1.244	100	9/27/00	7.5	40	465648	1161843	1733	1006	727
Keeler Creek	1.244-1.344	100	9/28/00	5.5	30	465648	1161843	2226	1188	1038
Keeler Creek	1.344-1.444	100	9/28/00	8	40	465644	1161844	2944	1636	1278
Keeler Creek	1.444-1.544	100	9/29/00	7	40	465642	1161848	2747	1534	1213
Keeler Creek	1.544-1.644	100	9/29/00	7	40	465641	1161850	2119	1264	855
Keeler Creek	1.644-1.744	100	10/3/00	NA	NA	465641	1161850	1587	1587	NA
Keeler Creek	1.744-1.844	100	10/3/00	NA	NA	465637	1161855	2792	1532	1260
Keeler Creek	1.844-1.944	100	10/4/00	4	50	465637	1161855	2892	1444	1448
Keeler Creek	1.944-2.044	100	10/4/00	5.5	40	465632	1161855	2126	1410	716
Keeler Creek	2.044-2.144	100	10/5/00	3.5	50	465629	1161857	2189	954	1235
Keeler Creek	2.144-2.244	100	10/5/00	4.5	40	465629	1161857	2037	1217	820
Keeler Creek	2.244-2.344	100	10/10/00	5.5	30	465628	1161857	3320	1654	1666
Keeler Creek	2.344-2.444	100	10/10/00	5.5	30	465625	1161904	2172	1315	857
Keeler Creek	2.444-2.544	100	10/11/00	NA	NA	465623	1161905	1711	1711	NA

Table A22. continued

Potlatch Stream Site	Transect ID# (km)	Transect Length (m)	Survey Date	Water Temp (°C)	Conductivity (ms)	Latitude	Longitude	Total Electrofishing Time (s)	Electrofishing Time (s) 1st Pass	Electrofishing Time (s) 2nd Pass
Keeler Creek	2.544-2.644	100	10/11/00	6	30	465621	1161906	1183	1183	NA
Keeler Creek	2.644-2.744	100	10/11/00	7.5	30	465619	1161909	2105	2105	NA
Keeler Creek	2.744-2.844	100	NA	NA	NA	NA	NA	NA	NA	NA
Keeler Creek	2.844-2.944	100	10/11/00	8	30	465621	1161905	1835	1835	NA
Keeler Creek	2.944-3.044	100	10/12/00	7	30	465615	1161911	NA	NA	NA
Keeler Creek	3.044-3.144	100	10/12/00	7.5	30	465613	1161911	1683	1683	NA
Keeler Creek	3.144-3.244	100	10/12/00	7.5	30	465609	1161912	1087	1087	NA
Keeler Creek	3.244-3.344	100	10/12/00	8	30	465609	1161913	1286	1286	NA
Keeler Creek	3.344-3.444	100	10/16/00	7.5	20	465608	1161915	936	936	NA
Keeler Creek	3.444-3.544	100	10/16/00	7	20	465605	1161915	1520	1520	NA
Keeler Creek	3.544-3.644	100	10/17/00	7	20	465603	1161916	977	977	NA
Keeler Creek	3.644-3.744	100	10/17/00	7.5	20	465600	1161917	1498	1498	NA
Keeler Creek	3.744-3.844	100	10/17/00	7	20	465558	1161919	986	986	NA
Keeler Creek	3.844-3.944	100	10/18/00	6.5	20	465556	1161918	1361	1361	NA
Keeler Creek	3.944-4.044	100	10/18/00	7	20	465553	1161917	823	823	NA
Keeler Creek	4.044-4.144	100	10/18/00	7	20	465553	1161915	865	865	NA
Keeler Creek	4.144-4.244	100	10/18/00	7	20	465550	1161912	794	794	NA
Keeler Creek	4.244-4.344	100	10/19/00	6.5	NA	465546	1161911	848	848	NA
Keeler Creek	4.344-4.444	100	10/19/00	6.5	NA	465545	1161909	1023	1023	NA
Keeler Creek	4.444-4.544	100	10/19/00	7	NA	465545	1161907	821	821	NA

Table A23. Total number and number per pass of brook trout, westslope cutthroat trout, and sculpin species in 46 transects sampled in Keeler Creek, 2000.

Potlatch Stream Site	Transect ID# (km)	Total Brook Trout	Brook Trout 1st Pass	Brook Trout 2nd Pass	Total Cutthroat Trout	Cutthroat Trout 1st Pass	Cutthroat Trout 2nd Pass	Total Sculpin *sp.*	Sculpin *sp.* 1st Pass	Sculpin *sp.* 2nd Pass
Keeler Creek	0.0-0.1	5	4	1	40	29	11	84	52	32
Keeler Creek	0.1-0.2	3	3	0	19	17	2	50	20	30
Keeler Creek	0.2-0.3	3	2	1	11	9	2	44	26	18
Keeler Creek	0.3-0.344	5	2	3	7	3	4	30	16	14
Keeler Creek	0.344-0.444	6	5	1	4	3	1	47	27	20
Keeler Creek	0.444-0.544	7	5	2	4	3	1	36	20	16
Keeler Creek	0.544-0.644	3	3	0	6	6	0	42	27	15
Keeler Creek	0.644-0.744	2	2	0	11	7	4	27	12	15
Keeler Creek	0.744-0.844	4	2	2	6	6	0	68	57	11
Keeler Creek	0.844-0.944	3	2	1	5	4	1	42	30	12
Keeler Creek	0.944-1.044	0	0	0	10	5	5	33	22	11
Keeler Creek	1.044-1.144	0	0	0	3	2	1	32	21	11
Keeler Creek	1.144-1.244	0	0	0	2	1	1	16	10	6
Keeler Creek	1.244-1.344	0	0	0	6	3	3	10	6	4
Keeler Creek	1.344-1.444	3	3	0	3	2	1	22	15	7
Keeler Creek	1.444-1.544	3	3	0	10	8	2	17	9	8
Keeler Creek	1.544-1.644	0	0	0	9	7	2	36	18	18
Keeler Creek	1.644-1.744	0	0	0	8	8	0	43	30	13
Keeler Creek	1.744-1.844	3	3	0	7	7	0	87	47	40
Keeler Creek	1.844-1.944	0	0	0	21	15	6	90	52	38
Keeler Creek	1.944-2.044	0	0	0	26	22	4	68	48	20
Keeler Creek	2.044-2.144	0	0	0	10	5	5	44	26	18
Keeler Creek	2.144-2.244	0	0	0	9	7	2	59	32	27
Keeler Creek	2.244-2.344	1	0	1	11	11	0	23	17	6
Keeler Creek	2.344-2.444	1	1	0	8	8	0	28	21	7

Table A23. continued

Potlatch Stream Site	Transect ID# (km)	Total Brook Trout	Brook Trout 1st Pass	Brook Trout 2nd Pass	Total Cutthroat Trout	Cutthroat Trout 1st Pass	Cutthroat Trout 2nd Pass	Total Sculpin *sp.*	Sculpin *sp.* 1st Pass	Sculpin *sp.* 2nd Pass
Keeler Creek	2.444-2.544	0	0	NA	2	2	NA	13	13	NA
Keeler Creek	2.544-2.644	1	1	NA	6	6	NA	5	5	NA
Keeler Creek	2.644-2.744	2	2	NA	6	6	NA	27	27	NA
Keeler Creek	2.744-2.844	NA	NA	NA	NA	NA	NA	NA	NA	NA
Keeler Creek	2.844-2.944	2	2	NA	16	16	NA	56	56	NA
Keeler Creek	2.944-3.044	0	0	NA	2	2	NA	24	24	NA
Keeler Creek	3.044-3.144	0	0	NA	8	8	NA	26	26	NA
Keeler Creek	3.144-3.244	0	0	NA	4	4	NA	22	22	NA
Keeler Creek	3.244-3.344	0	0	NA	9	9	NA	12	12	NA
Keeler Creek	3.344-3.444	1	1	NA	1	1	NA	12	12	NA
Keeler Creek	3.444-3.544	0	0	NA	6	6	NA	25	25	NA
Keeler Creek	3.544-3.644	0	0	NA	5	5	NA	43	43	NA
Keeler Creek	3.644-3.744	0	0	NA	4	4	NA	41	41	NA
Keeler Creek	3.744-3.844	0	0	NA	2	2	NA	16	16	NA
Keeler Creek	3.844-3.944	0	0	NA	5	5	NA	22	22	NA
Keeler Creek	3.944-4.044	0	0	NA	10	10	NA	8	8	NA
Keeler Creek	4.044-4.144	0	0	NA	8	8	NA	13	13	NA
Keeler Creek	4.144-4.244	0	0	NA	18	18	NA	19	19	NA
Keeler Creek	4.244-4.344	0	0	NA	18	18	NA	27	27	NA
Keeler Creek	4.344-4.444	0	0	NA	8	8	NA	11	11	NA
Keeler Creek	4.444-4.544	0	0	NA	13	13	NA	10	10	NA

Table A24. Total number and number per pass of speckled dace, red-sided shiner, Idaho giant salamander, and Columbia spotted frog in 46 transects on Keeler Creek, 2000.

Potlatch Stream Site	Transect ID# (km)	Total Speckled Dace	Speckled Dace 1st Pass	Speckled Dace 2nd Pass	Total Red-sided Shiner	Red-sided Shiner 1st Pass	Red-sided Shiner 2nd Pass	Total ID. Giant Salamander	ID. Giant Salamander 1st Pass	ID. Giant Salamander 2nd Pass	Total Spotted Frog	Spotted Frog 1st Pass	Spotted Frog 2nd Pass
Keeler Creek	0.0-0.1	1	1	0	0	0	0	1	0	1	0	0	0
Keeler Creek	0.1-0.2	1	1	0	0	0	0	0	0	0	0	0	0
Keeler Creek	0.2-0.3	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	0.3-0.344	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	0.344-0.444	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	0.444-0.544	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	0.544-0.644	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	0.644-0.744	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	0.744-0.844	14	5	9	0	0	0	0	0	0	0	0	0
Keeler Creek	0.844-0.944	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	0.944-1.044	2	2	0	0	0	0	0	0	0	0	0	0
Keeler Creek	1.044-1.144	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	1.144-1.244	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	1.244-1.344	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	1.344-1.444	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	1.444-1.544	1	1	0	0	0	0	0	0	0	0	0	0
Keeler Creek	1.544-1.644	1	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	1.644-1.744	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	1.744-1.844	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	1.844-1.944	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	1.944-2.044	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	2.044-2.144	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	2.144-2.244	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	2.244-2.344	0	0	0	0	0	0	0	0	0	0	0	0

Table A24. continued

Potlatch Stream Site	Transect ID# (km)	Total Speckled Dace	Speckled Dace 1st Pass	Speckled Dace 2nd Pass	Total Red-sided Shiner	Red-sided Shiner 1st Pass	Red-sided Shiner 2nd Pass	Total ID. Giant Salamander	ID. Giant Salamander 1st Pass	ID. Giant Salamander 2nd Pass	Total Spotted Frog	Spotted Frog 1st Pass	Spotted Frog 2nd Pass
Keeler Creek	2.344-2.444	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	2.444-2.544	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	2.544-2.644	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	2.644-2.744	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	2.744-2.844	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Keeler Creek	2.844-2.944	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	2.944-3.044	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	3.044-3.144	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	3.144-3.244	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	3.244-3.344	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	3.344-3.444	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	3.444-3.544	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	3.544-3.644	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	3.644-3.744	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	3.744-3.844	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	3.844-3.944	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	3.944-4.044	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	4.044-4.144	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	4.144-4.244	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	4.244-4.344	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	4.344-4.444	0	0	0	0	0	0	0	0	0	0	0	0
Keeler Creek	4.444-4.544	0	0	0	0	0	0	0	0	0	0	0	0

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